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TAMOIL RAFFINAZIONE S.p.A
Raffinaria di Cremona

Tamoil Cremona Refinery
Cremona Upgrading Program (CUP)
Hydrocracker Project

Hydrocracking Unit (HCU)
Heat & Material Balance
and Compositions

							Document No: 180480-HCU-011-31-301-0004-Rev 01		Client Document No: 07003-90-PE-XXXX-Rev 01	
01	26-Sep-07	Issued For Internal Review	J.D.	S.S.	R.H.		Project No: 180480	Rev: 01	Project No: 07003	Rev:
Rev	Date	Issue Description	Orig	Check	Appr	Client				

STREAM DATA SHEETS
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
08/23/2007 01:36:48

Stream No	101	102	103	104	105	106
From	VDU	VDU	11-E-101	11-E-102A-B	11-FT-101	11-V-101
To	11-E-101	11-E-101	11-E-102A-B	11-FT-101	11-V-101	11-P-101A/B
Content	HVGO	HVGO	HVGO	HVGO	HVGO	HVGO
START-OF-RUN						
Flow Mass, kg/hr	121869	121869	121869	121869	121869	121869
Flow Molar, kg-moles/hr	273	273	273	273	273	273
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	132.2	132.2	132.2	132.2	132.2	132.2
Flow Condition, m³/hr						
Flow Condition, m³/hr	147.5	147.6	149.3	152.9	153.0	153.0
Temperature, °C	165	165	181	215	215	215
Pseudo Crit Temp, °C	628	628	628	628	628	628
Pressure, Bar (g)	11.0	9.1	8.1	6.5	3.5	3.5
Pseudo Crit Pres, Bar (a)	11.1	11.1	11.1	11.1	11.1	11.1
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	22.0	22.0	22.0	22.0	22.0	22.0
Liquid Density, kg/m³	826.1	825.7	816.5	797.3	796.3	796.3
Liquid Viscosity, cP	3.918	3.906	3.109	2.093	2.083	2.083
Liquid K, W/m/°C	0.129	0.129	0.127	0.122	0.122	0.122
Liquid Spec Heat, kJ/kg/°C	2.384	2.384	2.450	2.584	2.584	2.584
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	< 0.01					< 0.01
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	311.5	311.5	351.1	436.1	436.1	436.1
Enthalpy, MW	10.5	10.5	11.9	14.8	14.8	14.8
END-OF-RUN						
Flow Mass, kg/hr	121869	121869	121869	121869	121869	121869
Flow Molar, kg-moles/hr	273	273	273	273	273	273
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	132.2	132.2	132.2	132.2	132.2	132.2
Flow Condition, m³/hr						
Flow Condition, m³/hr	147.5	147.6	149.3	152.9	153.0	153.0
Temperature, °C	165	165	181	215	215	215
Pseudo Crit Temp, °C	628	628	628	628	628	628
Pressure, Bar (g)	11.0	9.1	8.1	6.5	3.5	3.5
Pseudo Crit Pres, Bar (a)	11.1	11.1	11.1	11.1	11.1	11.1
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	22.0	22.0	22.0	22.0	22.0	22.0
Liquid Density, kg/m³	826.1	825.7	816.5	797.3	796.3	796.3
Liquid Viscosity, cP	3.918	3.906	3.109	2.093	2.083	2.083
Liquid K, W/m/°C	0.129	0.129	0.127	0.122	0.122	0.122
Liquid Spec Heat, kJ/kg/°C	2.384	2.384	2.450	2.584	2.584	2.584
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	< 0.01					< 0.01
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	311.5	311.5	351.1	436.1	436.1	436.1
Enthalpy, MW	10.5	10.5	11.9	14.8	14.8	14.8

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	107	108	109	110	111	112
From	11-P-101A/B	11-P-101A/B	11-P-101A/B	11-E-103A-B	11-E-103A-B	11-F-101
To	11-E-103A-B	11-E-103A-B	11-E-103A-B	11-F-101	11-F-101	11-R-101
Content	HVGO	HVGO	HVGO	HVGO	HVGO	HVGO
START-OF-RUN						
Flow Mass, kg/hr	121869	121869	138154	138154	138154	138154
Flow Molar, kg-moles/hr	273	273	5256	5256	5256	5256
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	132.2	132.2				
Flow Condition, m³/hr						
Flow Condition, m³/hr	147.9	147.9				
Temperature, °C	218	218	212	357	357	385
Pseudo Crit Temp, °C	628	628				
Pressure, Bar (g)	170.9	165.4	165.1	163.1	162.8	157.6
Pseudo Crit Pres, Bar (a)	11.1	11.1				
Wt % Vaporized	0.0	0.0	11.2	12.5	12.5	13.6
Liquid Deg API	22.0	22.0				
Liquid Density, kg/m³	824.2	823.8	786.8	712.8	712.9	699.2
Liquid Viscosity, cP	2.592	2.571	1.988	0.681	0.682	0.593
Liquid K, W/m/°C	0.122	0.122	0.123	0.100	0.100	0.095
Liquid Spec Heat, kJ/kg/°C	2.595	2.595	2.592	3.178	3.178	3.290
Surface Tension, dyne/cm			14	10	10	10
Liquid Vpr Press, Bar (a)	< 0.01					
Vapor Density, kg/m³			12.12	10.57	10.55	10.65
Vapor Viscosity, cP			0.013	0.016	0.016	0.016
Vapor K, W/m/°C			0.275	0.331	0.331	0.340
Vapor Spec Heat, kJ/kg/°C			9.934	9.287	9.285	8.831
Vapor Mol Wt			3.2	3.6	3.6	3.9
Enthalpy, kJ/kg	443.3	443.3	620.1	1156.6	1156.6	1269.2
Enthalpy, MW	15.0	15.0	23.8	44.4	44.4	48.7
END-OF-RUN						
Flow Mass, kg/hr	121869	121869	139531	139531	139531	139531
Flow Molar, kg-moles/hr	273	273	5255	5255	5255	5255
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	132.2	132.2				
Flow Condition, m³/hr						
Flow Condition, m³/hr	147.8	147.9				
Temperature, °C	218	218	213	372	372	400
Pseudo Crit Temp, °C	628	628				
Pressure, Bar (g)	173.3	167.8	167.5	165.5	165.2	160.0
Pseudo Crit Pres, Bar (a)	11.1	11.1				
Wt % Vaporized	0.0	0.0	12.0	13.7	13.7	15.0
Liquid Deg API	22.0	22.0				
Liquid Density, kg/m³	824.4	824.0	784.8	702.6	702.7	688.9
Liquid Viscosity, cP	2.602	2.581	1.968	0.626	0.626	0.548
Liquid K, W/m/°C	0.122	0.122	0.123	0.098	0.098	0.092
Liquid Spec Heat, kJ/kg/°C	2.595	2.595	2.594	3.239	3.239	3.355
Surface Tension, dyne/cm			14	10	10	9
Liquid Vpr Press, Bar (a)	< 0.01					
Vapor Density, kg/m³			13.31	11.61	11.60	11.81
Vapor Viscosity, cP			0.014	0.017	0.017	0.017
Vapor K, W/m/°C			0.269	0.329	0.329	0.337
Vapor Spec Heat, kJ/kg/°C			9.279	8.630	8.629	8.188
Vapor Mol Wt			3.4	4.0	4.0	4.3
Enthalpy, kJ/kg	443.3	443.3	620.5	1212.9	1212.9	1326.8
Enthalpy, MW	15.0	15.0	24.0	47.0	47.0	51.4

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	113	114	115	116	117	118
From	11-F-101	11-R-101	11-E-103A-B	11-E-103A-B	11-E-105	11-E-106
To	11-R-101	11-E-103A-B	11-E-105	11-E-105	11-E-106	11-V-103
Content	HVGO	1ST STG EFFL	1ST STG EFFL	REACTOR EFFL	REACTOR EFFL	RX EFFL
START-OF-RUN						
Flow Mass, kg/hr	138154	152588	152593	252293	252293	252293
Flow Molar, kg-moles/hr	5256	8390	8390	12809	12809	12809
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr						
Flow Condition, m³/hr						
Temperature, °C	385	413	307	301	275	232
Pseudo Crit Temp, °C						
Pressure, Bar (g)	157.3	152.5	149.9	149.9	148.6	147.3
Pseudo Crit Pres, Bar (a)						
Wt % Vaporized	13.6	60.3	41.8	40.6	36.5	30.4
Liquid Deg API						
Liquid Density, kg/m³	699.3	607.5	653.3	642.0	652.2	669.8
Liquid Viscosity, cP	0.593	0.184	0.297	0.279	0.301	0.348
Liquid K, W/m/°C	0.095	0.069	0.097	0.096	0.102	0.110
Liquid Spec Heat, kJ/kg/°C	3.290	3.685	3.205	3.238	3.127	2.941
Surface Tension, dyne/cm	10	6	8	8	9	10
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	10.63	28.68	23.51	25.11	23.58	21.27
Vapor Viscosity, cP	0.016	0.018	0.016	0.016	0.016	0.015
Vapor K, W/m/°C	0.340	0.296	0.276	0.272	0.266	0.257
Vapor Spec Heat, kJ/kg/°C	8.825	4.903	5.449	5.298	5.520	5.998
Vapor Mol Wt	3.9	11.3	8.0	8.4	7.6	6.4
Enthalpy, kJ/kg	1269.2	1652.6	1166.9	1122.7	1010.0	828.8
Enthalpy, MW	48.7	70.0	49.5	78.7	70.8	58.1
END-OF-RUN						
Flow Mass, kg/hr	139531	153579	153577	254930	254930	254930
Flow Molar, kg-moles/hr	5255	8004	8004	12463	12463	12463
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr						
Flow Condition, m³/hr						
Temperature, °C	400	428	308	303	280	232
Pseudo Crit Temp, °C						
Pressure, Bar (g)	159.8	152.5	149.9	149.9	148.6	147.3
Pseudo Crit Pres, Bar (a)						
Wt % Vaporized	15.0	62.9	42.3	41.5	38.0	31.2
Liquid Deg API						
Liquid Density, kg/m³	689.0	598.7	651.8	641.0	650.2	669.9
Liquid Viscosity, cP	0.548	0.170	0.293	0.276	0.295	0.347
Liquid K, W/m/°C	0.092	0.065	0.097	0.096	0.101	0.110
Liquid Spec Heat, kJ/kg/°C	3.355	3.775	3.203	3.236	3.138	2.932
Surface Tension, dyne/cm	9	5	8	8	8	10
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	11.80	30.90	25.14	26.61	25.25	22.76
Vapor Viscosity, cP	0.017	0.019	0.017	0.017	0.016	0.015
Vapor K, W/m/°C	0.337	0.289	0.267	0.264	0.259	0.249
Vapor Spec Heat, kJ/kg/°C	8.187	4.742	5.226	5.113	5.274	5.720
Vapor Mol Wt	4.3	12.5	8.6	9.0	8.3	6.9
Enthalpy, kJ/kg	1326.8	1686.6	1148.4	1114.6	1017.1	816.8
Enthalpy, MW	51.4	72.0	49.0	78.9	72.0	57.8

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

Stream No	119	120	121	122	123	124
From	11-E-305	11-V-102	11-P-102A/B	11-P-102A/B	11-P-102A/B	11-E-104A-B
To	11-V-102	11-P-102A/B	11-E-104A-B	11-E-104A-B	11-E-104A-B	11-F-102
Content	2ND STG FEED	2ND STG FEED	2ND STG FEED	2ND STG FEED	2ND STG FEED	2ND STG FEED
START-OF-RUN						
Flow Mass, kg/hr	85604	85604	85604	85604	98091	98091
Flow Molar, kg-moles/hr	199	199	199	199	4018	4018
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	101.4	101.4	101.4	101.4		
Flow Condition, m³/hr						
Flow Condition, m³/hr	123.3	123.3	116.2	116.3		
Temperature, °C	262	262	265	265	245	342
Pseudo Crit Temp, °C	569	569	569	569		
Pressure, Bar (g)	3.5	3.5	169.5	164.0	163.8	161.7
Pseudo Crit Pres, Bar (a)	9.4	9.4	9.4	9.4		
Wt % Vaporized	0.0	0.0	0.0	0.0	12.2	13.5
Liquid Deg API	36.2	36.2	36.2	36.2		
Liquid Density, kg/m³	694.4	694.4	736.4	735.8	701.0	652.1
Liquid Viscosity, cP	0.524	0.524	0.635	0.631	0.604	0.365
Liquid K, W/m/°C	0.113	0.113	0.112	0.112	0.118	0.091
Liquid Spec Heat, kJ/kg/°C	3.064	3.064	3.076	3.076	3.007	3.437
Surface Tension, dyne/cm					12	9
Liquid Vpr Press, Bar (a)		0.56	0.62			
Vapor Density, kg/m³					11.46	10.72
Vapor Viscosity, cP					0.014	0.016
Vapor K, W/m/°C					0.289	0.326
Vapor Spec Heat, kJ/kg/°C					9.880	9.284
Vapor Mol Wt					3.2	3.6
Enthalpy, kJ/kg	622.9	622.9	631.1	631.1	798.1	1192.4
Enthalpy, MW	14.8	14.8	15.0	15.0	21.7	32.5
END-OF-RUN						
Flow Mass, kg/hr	85895	85895	85895	85895	99434	99434
Flow Molar, kg-moles/hr	200	200	200	200	4018	4018
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	101.5	101.5	101.5	101.5		
Flow Condition, m³/hr						
Flow Condition, m³/hr	123.6	123.6	116.5	116.6		
Temperature, °C	266	266	269	269	247	362
Pseudo Crit Temp, °C	570	570	570	570		
Pressure, Bar (g)	3.5	3.5	171.3	165.8	165.5	163.4
Pseudo Crit Pres, Bar (a)	9.5	9.5	9.5	9.5		
Wt % Vaporized	0.0	0.0	0.0	0.0	13.0	15.0
Liquid Deg API	35.6	35.6	35.6	35.6		
Liquid Density, kg/m³	694.7	694.7	737.4	736.8	700.3	641.7
Liquid Viscosity, cP	0.520	0.520	0.632	0.628	0.600	0.337
Liquid K, W/m/°C	0.112	0.112	0.112	0.112	0.118	0.085
Liquid Spec Heat, kJ/kg/°C	3.068	3.068	3.079	3.079	3.008	3.514
Surface Tension, dyne/cm					12	8
Liquid Vpr Press, Bar (a)		0.62	0.69			
Vapor Density, kg/m³					12.49	11.86
Vapor Viscosity, cP					0.014	0.016
Vapor K, W/m/°C					0.283	0.325
Vapor Spec Heat, kJ/kg/°C					9.242	8.525
Vapor Mol Wt					3.5	4.0
Enthalpy, kJ/kg	631.3	631.3	639.5	639.5	803.4	1270.7
Enthalpy, MW	15.1	15.1	15.3	15.3	22.2	35.1

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

Stream No	125	126	127	128	129	130
From	11-E-104A-B	11-F-102	11-F-102	11-R-102	11-E-104A-B	11-K-101
To	11-F-102	11-R-102	11-R-102	11-E-104A-B	11-E-105	11-R-101
Content	2DN STG FEED	2ND STG FEED	2ND STG FEED	2ND STG EFFL	2ND STG EFFL	RECYCLE GAS
START-OF-RUN						
Flow Mass, kg/hr	98091	98091	98091	99696	99695	14442
Flow Molar, kg-moles/hr	4018	4018	4018	4415	4415	4043
Flow Standard, Nm³/hr						90619.8
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr						769.7
Flow Condition, m³/hr						
Temperature, °C	342	369	369	381	292	80
Pseudo Crit Temp, °C						-226
Pressure, Bar (g)	161.4	156.2	156.0	152.5	149.9	167.7
Pseudo Crit Pres, Bar (a)						15
Wt % Vaporized	13.5	14.8	14.8	53.4	38.1	100.0
Liquid Deg API						
Liquid Density, kg/m³	652.2	638.7	638.8	588.8	624.5	
Liquid Viscosity, cP	0.365	0.324	0.324	0.187	0.249	
Liquid K, W/m/°C	0.091	0.081	0.081	0.064	0.094	
Liquid Spec Heat, kJ/kg/°C	3.437	3.560	3.560	3.693	3.286	
Surface Tension, dyne/cm	9	9	9	6	8	
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	10.71	10.89	10.88	33.55	27.81	18.76
Vapor Viscosity, cP	0.016	0.016	0.016	0.018	0.016	0.011
Vapor K, W/m/°C	0.326	0.334	0.334	0.279	0.265	0.212
Vapor Spec Heat, kJ/kg/°C	9.280	8.777	8.776	4.661	5.082	8.838
Vapor Mol Wt	3.6	3.9	3.9	12.7	9.2	3.6
Enthalpy, kJ/kg	1192.4	1312.9	1312.9	1443.1	1055.1	767.5
Enthalpy, MW	32.5	35.8	35.8	40.0	29.2	3.1
END-OF-RUN						
Flow Mass, kg/hr	99434	99434	99434	101356	101356	14043
Flow Molar, kg-moles/hr	4018	4018	4018	4459	4459	3590
Flow Standard, Nm³/hr						80466.3
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr						677.9
Flow Condition, m³/hr						
Temperature, °C	362	390	390	400	295	82
Pseudo Crit Temp, °C						-223
Pressure, Bar (g)	163.1	158.0	157.7	152.5	149.9	170.1
Pseudo Crit Pres, Bar (a)						16
Wt % Vaporized	15.0	16.7	16.8	57.5	39.7	100.0
Liquid Deg API						
Liquid Density, kg/m³	641.8	628.1	628.2	581.2	624.6	
Liquid Viscosity, cP	0.337	0.264	0.264	0.173	0.251	
Liquid K, W/m/°C	0.085	0.075	0.075	0.058	0.094	
Liquid Spec Heat, kJ/kg/°C	3.514	3.638	3.638	3.772	3.286	
Surface Tension, dyne/cm	8	8	8	5	7	
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	11.85	12.27	12.26	35.20	29.02	20.72
Vapor Viscosity, cP	0.016	0.017	0.017	0.018	0.016	0.012
Vapor K, W/m/°C	0.325	0.333	0.333	0.276	0.259	0.207
Vapor Spec Heat, kJ/kg/°C	8.523	8.011	8.007	4.569	4.951	8.178
Vapor Mol Wt	4.0	4.5	4.5	13.7	9.7	3.9
Enthalpy, kJ/kg	1270.7	1393.0	1393.0	1521.7	1063.3	745.8
Enthalpy, MW	35.1	38.5	38.5	42.8	29.9	2.9

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	131	132	133	135	136	137
From	11-K-101	11-K-101	11-K-101	11-K-101	11-E-107	11-E-107
To	11-R-102	11-R-102	11-E-107	11-E-107	11-E-103A-B	11-E-103A-B
Content	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS
START-OF-RUN						
Flow Mass, kg/hr	26636	1600	25039	28774	28774	16285
Flow Molar, kg-moles/hr	7454	447	7009	8800	8800	4983
Flow Standard, Nm³/hr	167074.0	10019.1	157099.7	197243.2	197243.2	111689.0
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr	1418.8	85.3	1334.4	1715.2	2217.9	1255.3
Flow Condition, m³/hr						
Temperature, °C	80	80	80	89	199	199
Pseudo Crit Temp, °C	-226	-226	-226	-229	-229	-229
Pressure, Bar (g)	167.8	167.7	167.7	167.6	166.4	166.4
Pseudo Crit Pres, Bar (a)	15	15	15	15	15	15
Wt % Vaporized	100.0	100.0	100.0	100.0	100.0	100.0
Liquid Deg API						
Liquid Density, kg/m³						
Liquid Viscosity, cP						
Liquid K, W/m/°C						
Liquid Spec Heat, kJ/kg/°C						
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	18.77	18.76	18.76	16.78	12.97	12.97
Vapor Viscosity, cP	0.011	0.011	0.011	0.011	0.013	0.013
Vapor K, W/m/°C	0.212	0.212	0.212	0.219	0.268	0.268
Vapor Spec Heat, kJ/kg/°C	8.838	8.838	8.838	9.529	9.641	9.641
Vapor Mol Wt	3.6	3.6	3.6	3.3	3.3	3.3
Enthalpy, kJ/kg	767.5	767.5	767.5	882.1	1943.3	1943.3
Enthalpy, MW	5.7	0.3	5.3	7.1	15.5	8.8
END-OF-RUN						
Flow Mass, kg/hr	29465	1921	27545	31202	31202	17662
Flow Molar, kg-moles/hr	7537	489	7046	8799	8799	4982
Flow Standard, Nm³/hr	168934.3	10960.4	157929.0	197220.8	197220.8	111666.5
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr	1421.6	92.7	1329.7	1697.5	2194.6	1242.2
Flow Condition, m³/hr						
Temperature, °C	82	82	82	90	201	201
Pseudo Crit Temp, °C	-223	-223	-223	-226	-226	-226
Pressure, Bar (g)	170.2	170.1	170.1	170.0	168.9	168.9
Pseudo Crit Pres, Bar (a)	16	16	16	15	15	15
Wt % Vaporized	100.0	100.0	100.0	100.0	100.0	100.0
Liquid Deg API						
Liquid Density, kg/m³						
Liquid Viscosity, cP						
Liquid K, W/m/°C						
Liquid Spec Heat, kJ/kg/°C						
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	20.73	20.72	20.72	18.38	14.22	14.22
Vapor Viscosity, cP	0.012	0.012	0.012	0.012	0.014	0.014
Vapor K, W/m/°C	0.207	0.207	0.207	0.215	0.263	0.263
Vapor Spec Heat, kJ/kg/°C	8.178	8.178	8.178	8.880	9.010	9.010
Vapor Mol Wt	3.9	3.9	3.9	3.5	3.5	3.5
Enthalpy, kJ/kg	745.8	745.8	745.8	852.1	1843.4	1843.4
Enthalpy, MW	6.1	0.4	5.7	7.4	16.0	9.0

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	138	139	140
From	11-E-107	11-E-107	11-E-107
To	11-E-103A-B	11-E-104A-B	11-E-104A-B
Content	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS
START-OF-RUN			
Flow Mass, kg/hr	16285	12488	12488
Flow Molar, kg-moles/hr	4983	3819	3819
Flow Standard, Nm³/hr	111689.0	85599.1	85599.1
Flow Standard, m³/hr @15.6°			
Flow Condition, m³/hr	1262.8	962.6	976.0
Flow Condition, m³/hr			
Temperature, °C	199	199	200
Pseudo Crit Temp, °C	-229	-229	-229
Pressure, Bar (g)	165.4	166.4	164.0
Pseudo Crit Pres, Bar (a)	15	15	15
Wt % Vaporized	100.0	100.0	100.0
Liquid Deg API			
Liquid Density, kg/m³			
Liquid Viscosity, cP			
Liquid K, W/m/°C			
Liquid Spec Heat, kJ/kg/°C			
Surface Tension, dyne/cm			
Liquid Vpr Press, Bar (a)			
Vapor Density, kg/m³	12.90	12.97	12.80
Vapor Viscosity, cP	0.013	0.013	0.013
Vapor K, W/m/°C	0.268	0.268	0.268
Vapor Spec Heat, kJ/kg/°C	9.641	9.641	9.641
Vapor Mol Wt	3.3	3.3	3.3
Enthalpy, kJ/kg	1943.3	1943.3	1943.3
Enthalpy, MW	8.8	6.7	6.7
END-OF-RUN			
Flow Mass, kg/hr	17662	13542	13542
Flow Molar, kg-moles/hr	4982	3818	3818
Flow Standard, Nm³/hr	111666.5	85576.7	85576.7
Flow Standard, m³/hr @15.6°			
Flow Condition, m³/hr	1249.4	952.5	969.2
Flow Condition, m³/hr			
Temperature, °C	201	201	201
Pseudo Crit Temp, °C	-226	-226	-226
Pressure, Bar (g)	167.8	168.9	165.8
Pseudo Crit Pres, Bar (a)	15	15	15
Wt % Vaporized	100.0	100.0	100.0
Liquid Deg API			
Liquid Density, kg/m³			
Liquid Viscosity, cP			
Liquid K, W/m/°C			
Liquid Spec Heat, kJ/kg/°C			
Surface Tension, dyne/cm			
Liquid Vpr Press, Bar (a)			
Vapor Density, kg/m³	14.14	14.22	13.97
Vapor Viscosity, cP	0.014	0.014	0.014
Vapor K, W/m/°C	0.263	0.263	0.263
Vapor Spec Heat, kJ/kg/°C	9.010	9.010	9.008
Vapor Mol Wt	3.5	3.5	3.5
Enthalpy, kJ/kg	1843.4	1843.4	1843.4
Enthalpy, MW	9.0	6.9	6.9

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

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STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	201	203	204	205	206	207
From	11-V-103	11-E-107	11-E-107	11-EA-101	11-V-103	11-V-103
To	11-E-107	11-EA-101	11-EA-101	11-V-104	11-V-105	11-V-105
Content	HHPS VAPOR	HHPS VAPOR	HHPS VAPOR	HHPS VAPOR	HHPS LIQ	RX EFFL
START-OF-RUN						
Flow Mass, kg/hr	76742	76742	84239	84239	175550	175550
Flow Molar, kg-moles/hr	11953	11953	12369	12369	854	854
Flow Standard, Nm³/hr	267914.5					
Flow Standard, m³/hr @15.6°					217.8	
Flow Condition, m³/hr	3610.8					
Flow Condition, m³/hr					262.1	
Temperature, °C	232	170	143	50	232	231
Pseudo Crit Temp, °C	-211				299	
Pressure, Bar (g)	147.2	145.9	145.9	144.6	147.3	28.7
Pseudo Crit Pres, Bar (a)	16				17.5	
Wt % Vaporized	100.0	89.1	80.0	50.2	0.0	1.4
Liquid Deg API					44.0	
Liquid Density, kg/m³		653.1	678.6	706.2	669.8	684.7
Liquid Viscosity, cP		0.256	0.228	0.466	0.348	0.341
Liquid K, W/m/°C		0.105	0.114	0.144	0.110	0.109
Liquid Spec Heat, kJ/kg/°C		2.703	2.786	2.614	2.941	2.915
Surface Tension, dyne/cm		9	28	43		12
Liquid Vpr Press, Bar (a)					148.31	
Vapor Density, kg/m³	21.25	21.44	22.06	18.22		9.71
Vapor Viscosity, cP	0.015	0.013	0.013	0.011		0.015
Vapor K, W/m/°C	0.257	0.235	0.219	0.197		0.197
Vapor Spec Heat, kJ/kg/°C	5.997	6.289	6.301	8.629		3.902
Vapor Mol Wt	6.4	5.8	5.6	3.6		13.8
Enthalpy, kJ/kg	1499.2	1101.3	1022.7	295.7	535.7	535.7
Enthalpy, MW	32.0	23.5	23.9	6.9	26.1	26.1
END-OF-RUN						
Flow Mass, kg/hr	79649	79649	87544	87544	175282	175282
Flow Molar, kg-moles/hr	11599	11599	12037	12037	866	866
Flow Standard, Nm³/hr	259980.0					
Flow Standard, m³/hr @15.6°					217.2	
Flow Condition, m³/hr	3502.4					
Flow Condition, m³/hr					261.7	
Temperature, °C	232	168	142	50	232	231
Pseudo Crit Temp, °C	-207				297	
Pressure, Bar (g)	147.2	145.9	145.9	144.6	147.3	28.7
Pseudo Crit Pres, Bar (a)	16				18.0	
Wt % Vaporized	100.0	89.2	79.8	51.0	0.0	1.6
Liquid Deg API					43.9	
Liquid Density, kg/m³		650.2	682.0	700.9	669.9	684.7
Liquid Viscosity, cP		0.251	0.222	0.458	0.347	0.342
Liquid K, W/m/°C		0.104	0.115	0.144	0.110	0.108
Liquid Spec Heat, kJ/kg/°C		2.694	2.835	2.630	2.932	2.906
Surface Tension, dyne/cm		9	30	43		12
Liquid Vpr Press, Bar (a)					148.31	
Vapor Density, kg/m³	22.74	23.06	23.65	19.92		10.34
Vapor Viscosity, cP	0.015	0.014	0.013	0.011		0.015
Vapor K, W/m/°C	0.249	0.228	0.213	0.191		0.188
Vapor Spec Heat, kJ/kg/°C	5.721	5.967	5.985	7.990		3.775
Vapor Mol Wt	6.9	6.2	5.9	4.0		14.7
Enthalpy, kJ/kg	1438.6	1050.2	975.6	291.4	534.2	534.2
Enthalpy, MW	31.8	23.2	23.7	7.1	26.0	26.0

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	208	209	210	211	212	213
From	OFFPLOT	OFFPLOT	OFFPLOT	11-V-108	11-P-103A/B	11-P-103A/B
To	11-V-108	11-V-108	11-V-108	11-P-103A/B	11-EA-101	11-EA-101
Content	SOUR WATER	SOUR WATER	SOUR WATER	INJ WATER	INJ WATER	INJ WATER
START-OF-RUN						
Flow Mass, kg/hr	204	204	7497	7497	7497	7497
Flow Molar, kg-moles/hr	11	11	416	416	416	416
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	0.2	0.2	7.5	7.5	7.5	7.5
Flow Condition, m³/hr						
Flow Condition, m³/hr	0.2	0.2	7.6	7.6	7.6	7.6
Temperature, °C	75	75	51	51	52	52
Pseudo Crit Temp, °C	374	374	374	374	374	374
Pressure, Bar (g)	5.5	3.5	3.5	3.5	151.9	145.9
Pseudo Crit Pres, Bar (a)	220.5	220.5	220.6	220.6	220.6	220.6
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	10.0	10.0	10.0	10.0	10.0	10.0
Liquid Density, kg/m³	972.6	972.6	984.8	984.8	984.3	984.3
Liquid Viscosity, cP	0.304	0.303	0.353	0.353	0.419	0.416
Liquid K, W/m/°C	0.659	0.659	0.638	0.638	0.640	0.640
Liquid Spec Heat, kJ/kg/°C	4.191	4.191	4.177	4.177	4.177	4.177
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	0.39			0.13	0.14	
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	314.2	314.2	213.0	213.0	218.1	218.1
Enthalpy, MW	0.0	0.0	0.4	0.4	0.5	0.5
END-OF-RUN						
Flow Mass, kg/hr	613	613	7894	7894	7894	7894
Flow Molar, kg-moles/hr	34	34	438	438	438	438
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	0.6	0.6	7.9	7.9	7.9	7.9
Flow Condition, m³/hr						
Flow Condition, m³/hr	0.6	0.6	8.0	8.0	8.0	8.0
Temperature, °C	75	75	52	52	53	53
Pseudo Crit Temp, °C	374	374	374	374	374	374
Pressure, Bar (g)	5.5	3.5	3.5	3.5	151.9	145.9
Pseudo Crit Pres, Bar (a)	220.5	220.5	220.6	220.6	220.6	220.6
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	10.0	10.0	10.0	10.0	10.0	10.0
Liquid Density, kg/m³	972.6	972.6	984.3	984.3	983.7	983.7
Liquid Viscosity, cP	0.304	0.303	0.350	0.350	0.415	0.412
Liquid K, W/m/°C	0.659	0.659	0.640	0.640	0.641	0.641
Liquid Spec Heat, kJ/kg/°C	4.191	4.191	4.177	4.177	4.178	4.178
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	0.39			0.14	0.14	
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	314.2	314.2	218.2	218.2	223.3	223.3
Enthalpy, MW	0.1	0.1	0.5	0.5	0.5	0.5

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	214	215	216	217	218	219
From	11-V-104	11-V-109	11-V-104	11-V-104	11-V-104	11-V-104
To	11-V-109	11-C-101	11-V-106	11-V-106	11-V-107	11-V-107
Content	CHPS VAPOR	CHPS VAPOR	CHPS LIQ	CHPS LIQ	SOUR WATER	SOUR WATER
START-OF-RUN						
Flow Mass, kg/hr	41640	41640	34333	34333	8263	8263
Flow Molar, kg-moles/hr	11557	11557	362	362	449	449
Flow Standard, Nm³/hr	259038.6	259038.6				
Flow Standard, m³/hr @15.6°			48.2		8.6	
Flow Condition, m³/hr	2316.0	2322.7				
Flow Condition, m³/hr			51.6		8.8	
Temperature, °C	50	50	50	49	50	50
Pseudo Crit Temp, °C	-226	-226	221		356	
Pressure, Bar (g)	144.5	144.0	144.6	27.7	144.3	8.1
Pseudo Crit Pres, Bar (a)	15	15	29.3		212.4	
Wt % Vaporized	100.0	100.0	0.0	0.6	0.0	0.1
Liquid Deg API			67.2		16.1	
Liquid Density, kg/m³			665.3	688.5	935.1	941.7
Liquid Viscosity, cP			0.388	0.372	0.393	0.336
Liquid K, W/m/°C			0.122	0.121	0.440	0.442
Liquid Spec Heat, kJ/kg/°C			2.278	2.254	4.118	4.117
Surface Tension, dyne/cm				18		64
Liquid Vpr Press, Bar (a)			145.61		0.12	
Vapor Density, kg/m³	17.98	17.93		7.18		1.31
Vapor Viscosity, cP	0.011	0.011		0.011		0.010
Vapor K, W/m/°C	0.197	0.197		0.151		0.163
Vapor Spec Heat, kJ/kg/°C	8.728	8.727		5.090		7.792
Vapor Mol Wt	3.6	3.6		6.8		3.9
Enthalpy, kJ/kg	491.3	491.3	75.8	75.8	205.7	205.7
Enthalpy, MW	5.7	5.7	0.7	0.7	0.5	0.5
END-OF-RUN						
Flow Mass, kg/hr	44056	44056	34817	34817	8668	8668
Flow Molar, kg-moles/hr	11187	11187	378	378	472	472
Flow Standard, Nm³/hr	250745.4	250745.4				
Flow Standard, m³/hr @15.6°			49.3		9.0	
Flow Condition, m³/hr	2239.0	2245.4				
Flow Condition, m³/hr			52.9		9.3	
Temperature, °C	50	50	50	49	50	50
Pseudo Crit Temp, °C	-223	-223	214		356	
Pressure, Bar (g)	144.5	144.0	144.6	27.7	144.3	8.1
Pseudo Crit Pres, Bar (a)	16	16	29.9		212.7	
Wt % Vaporized	100.0	100.0	0.0	0.8	0.0	0.1
Liquid Deg API			68.7		15.2	
Liquid Density, kg/m³			658.2	683.4	936.4	943.0
Liquid Viscosity, cP			0.374	0.360	0.394	0.336
Liquid K, W/m/°C			0.121	0.120	0.443	0.446
Liquid Spec Heat, kJ/kg/°C			2.285	2.258	4.119	4.118
Surface Tension, dyne/cm				18		64
Liquid Vpr Press, Bar (a)			145.61		0.12	
Vapor Density, kg/m³	19.68	19.62		8.16		1.41
Vapor Viscosity, cP	0.011	0.011		0.011		0.011
Vapor K, W/m/°C	0.191	0.191		0.140		0.159
Vapor Spec Heat, kJ/kg/°C	8.075	8.074		4.605		7.278
Vapor Mol Wt	3.9	3.9		7.7		4.2
Enthalpy, kJ/kg	475.1	475.1	76.1	76.1	205.8	205.8
Enthalpy, MW	5.8	5.8	0.7	0.7	0.5	0.5

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	221	222	223	224	225	226
From	11-V-105	11-EA-102	11-EA-102	11-V-105	11-V-105	11-V-105
To	11-EA-102	11-V-106	11-V-106	11-C-201	11-C-201	11-C-201
Content	HLPS VAPOR	HLPS VAPOR	HLPS VAPOR	HLPS LIQUID	HLPS LIQUID	STRIPPER FD
START-OF-RUN						
Flow Mass, kg/hr	2502	2502	36837	173047	173047	208625
Flow Molar, kg-moles/hr	181	181	544	673	673	1017
Flow Standard, Nm³/hr	4056.9					
Flow Standard, m³/hr @15.6°				210.1		
Flow Condition, m³/hr	258.5					
Flow Condition, m³/hr				252.7		
Temperature, °C	231	50	49	231	231	221
Pseudo Crit Temp, °C	-170			425		
Pressure, Bar (g)	28.6	27.7	27.7	28.7	8.7	7.0
Pseudo Crit Pres, Bar (a)	18			17.3		
Wt % Vaporized	100.0	38.8	3.4	0.0	0.7	3.8
Liquid Deg API				40.3		
Liquid Density, kg/m³		693.9	690.5	684.7	683.0	668.0
Liquid Viscosity, cP		0.382	0.376	0.341	0.342	0.279
Liquid K, W/m/°C		0.124	0.122	0.109	0.104	0.094
Liquid Spec Heat, kJ/kg/°C		2.246	2.250	2.915	2.909	2.881
Surface Tension, dyne/cm		18	18		13	12
Liquid Vpr Press, Bar (a)				29.71		
Vapor Density, kg/m³	9.68	6.15	6.67		7.29	12.26
Vapor Viscosity, cP	0.015	0.011	0.011		0.013	0.012
Vapor K, W/m/°C	0.197	0.164	0.158		0.124	0.059
Vapor Spec Heat, kJ/kg/°C	3.902	5.764	5.413		2.920	2.531
Vapor Mol Wt	13.8	5.8	6.3		31.3	60.0
Enthalpy, kJ/kg	1076.9	219.8	85.6	527.9	527.9	511.3
Enthalpy, MW	0.7	0.2	0.9	25.4	25.4	29.6
END-OF-RUN						
Flow Mass, kg/hr	2740	2740	37559	172543	172543	208642
Flow Molar, kg-moles/hr	186	186	566	676	676	1035
Flow Standard, Nm³/hr	4169.0					
Flow Standard, m³/hr @15.6°				209.1		
Flow Condition, m³/hr	265.8					
Flow Condition, m³/hr				252.0		
Temperature, °C	231	50	49	231	231	221
Pseudo Crit Temp, °C	-162			423		
Pressure, Bar (g)	28.6	27.7	27.7	28.7	8.7	7.0
Pseudo Crit Pres, Bar (a)	19			17.7		
Wt % Vaporized	100.0	40.0	3.9	0.0	0.7	4.5
Liquid Deg API				40.0		
Liquid Density, kg/m³		690.3	686.1	684.7	684.3	669.4
Liquid Viscosity, cP		0.372	0.365	0.342	0.344	0.281
Liquid K, W/m/°C		0.123	0.121	0.108	0.103	0.093
Liquid Spec Heat, kJ/kg/°C		2.249	2.254	2.906	2.899	2.872
Surface Tension, dyne/cm		18	18		13	12
Liquid Vpr Press, Bar (a)				29.71		
Vapor Density, kg/m³	10.31	6.79	7.46		7.69	12.57
Vapor Viscosity, cP	0.015	0.011	0.011		0.013	0.012
Vapor K, W/m/°C	0.188	0.156	0.149		0.116	0.055
Vapor Spec Heat, kJ/kg/°C	3.775	5.318	4.955		2.868	2.516
Vapor Mol Wt	14.7	6.4	7.0		32.9	61.3
Enthalpy, kJ/kg	1049.5	220.6	86.6	526.0	526.0	511.3
Enthalpy, MW	0.8	0.2	0.9	25.2	25.2	29.6

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	227	228	229	230	231	232
From	11-C-101	11-V-110	11-V-110	11-K-101		11-C-101
To	11-V-110	11-K-101	11-K-101	HCR RX		11-V-112
Content	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	EST LEAKS	RICH AMINE
START-OF-RUN						
Flow Mass, kg/hr	41169	41169	41081	41081	89	20023
Flow Molar, kg-moles/hr	11542	11542	11498	11498	44	919
Flow Standard, Nm³/hr	258702.4	258702.4	257716.2	257716.2	986.2	
Flow Standard, m³/hr @15.6°						19.9
Flow Condition, m³/hr	2375.8	2375.8	2368.5	2188.2	9.1	
Flow Condition, m³/hr						20.4
Temperature, °C	58	58	58	80	58	53
Pseudo Crit Temp, °C	-226	-226	-226	-226	-240	371
Pressure, Bar (g)	143.7	143.7	143.6	167.8	143.7	143.9
Pseudo Crit Pres, Bar (a)	15	15	15	15	13	210.3
Wt % Vaporized	100.0	100.0	100.0	100.0	100.0	0.0
Liquid Deg API						9.0
Liquid Density, kg/m³						982.6
Liquid Viscosity, cP						0.419
Liquid K, W/m/°C						0.361
Liquid Spec Heat, kJ/kg/°C						3.831
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)						0.14
Vapor Density, kg/m³	17.33	17.33	17.34	18.77	9.77	
Vapor Viscosity, cP	0.011	0.011	0.011	0.011	0.010	
Vapor K, W/m/°C	0.200	0.200	0.200	0.212	0.219	
Vapor Spec Heat, kJ/kg/°C	8.816	8.816	8.804	8.838	14.608	
Vapor Mol Wt	3.6	3.6	3.6	3.6	2.0	
Enthalpy, kJ/kg	561.5	561.5	561.2	767.5	694.5	163.1
Enthalpy, MW	6.4	6.4	6.4	8.8	0.0	0.9
END-OF-RUN						
Flow Mass, kg/hr	43597	43597	43509	43509	89	19564
Flow Molar, kg-moles/hr	11172	11172	11128	11128	44	896
Flow Standard, Nm³/hr	250409.2	250409.2	249423.0	249423.0	986.2	
Flow Standard, m³/hr @15.6°						19.4
Flow Condition, m³/hr	2297.0	2297.0	2289.4	2099.2	9.1	
Flow Condition, m³/hr						19.9
Temperature, °C	58	58	58	82	58	53
Pseudo Crit Temp, °C	-223	-223	-223	-223	-240	371
Pressure, Bar (g)	143.7	143.7	143.6	170.2	143.7	143.9
Pseudo Crit Pres, Bar (a)	16	16	16	16	13	210.4
Wt % Vaporized	100.0	100.0	100.0	100.0	100.0	0.0
Liquid Deg API						8.9
Liquid Density, kg/m³						983.0
Liquid Viscosity, cP						0.419
Liquid K, W/m/°C						0.361
Liquid Spec Heat, kJ/kg/°C						3.831
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)						0.14
Vapor Density, kg/m³	18.98	18.98	19.00	20.73	9.77	
Vapor Viscosity, cP	0.011	0.011	0.011	0.012	0.010	
Vapor K, W/m/°C	0.195	0.195	0.195	0.207	0.219	
Vapor Spec Heat, kJ/kg/°C	8.150	8.150	8.137	8.178	14.608	
Vapor Mol Wt	3.9	3.9	3.9	3.9	2.0	
Enthalpy, kJ/kg	539.8	539.8	539.5	745.8	694.5	163.2
Enthalpy, MW	6.5	6.5	6.5	9.0	0.0	0.9

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	233	234	235	236	237	238
From	11-C-101	11-V-106	11-V-106	11-V-106	11-V-106	11-E-110
To	11-V-112	AMINE ABS	AMINE ABS	11-E-110	11-E-110	11-E-109
Content	RICH AMINE	CLPS VAPOR	CLPS VAPOR	CLPS LIQUID	CLPS LIQUID	CLPS LIQUID
START-OF-RUN						
Flow Mass, kg/hr	20023	1262	1262	35576	35576	35576
Flow Molar, kg-moles/hr	919	199	199	344	344	344
Flow Standard, Nm³/hr		4460.4	4460.4			
Flow Standard, m³/hr @15.6°				49.0		
Flow Condition, m³/hr		189.7	197.0			
Flow Condition, m³/hr				51.5		
Temperature, °C	53	49	49	49	49	154
Pseudo Crit Temp, °C		-204	-204	263		
Pressure, Bar (g)	10.2	27.5	26.5	27.7	10.3	9.4
Pseudo Crit Pres, Bar (a)		18	18	30.2		
Wt % Vaporized	0.1	100.0	100.0	0.0	0.2	4.9
Liquid Deg API				63.5		
Liquid Density, kg/m³	986.9			690.5	694.1	596.9
Liquid Viscosity, cP	0.358			0.376	0.374	0.171
Liquid K, W/m/°C	0.362			0.122	0.122	0.085
Liquid Spec Heat, kJ/kg/°C	3.831			2.250	2.245	2.694
Surface Tension, dyne/cm	65				19	9
Liquid Vpr Press, Bar (a)				28.71		
Vapor Density, kg/m³	1.57	6.65	6.41		4.95	16.43
Vapor Viscosity, cP	0.010	0.011	0.011		0.011	0.011
Vapor K, W/m/°C	0.163	0.158	0.158		0.115	0.046
Vapor Spec Heat, kJ/kg/°C	7.914	5.413	5.411		3.454	2.325
Vapor Mol Wt	3.8	6.3	6.3		11.6	52.3
Enthalpy, kJ/kg	163.1	440.0	440.0	73.0	73.0	345.7
Enthalpy, MW	0.9	0.2	0.2	0.7	0.7	3.4
END-OF-RUN						
Flow Mass, kg/hr	19564	1461	1461	36100	36100	36100
Flow Molar, kg-moles/hr	896	206	206	358	358	358
Flow Standard, Nm³/hr		4617.3	4617.3			
Flow Standard, m³/hr @15.6°				50.0		
Flow Condition, m³/hr		196.6	204.1			
Flow Condition, m³/hr				52.6		
Temperature, °C	53	49	49	49	49	154
Pseudo Crit Temp, °C		-197	-197	257		
Pressure, Bar (g)	10.2	27.5	26.5	27.7	10.3	9.4
Pseudo Crit Pres, Bar (a)		19	19	30.7		
Wt % Vaporized	0.0	100.0	100.0	0.0	0.2	6.5
Liquid Deg API				64.6		
Liquid Density, kg/m³	987.0			686.1	690.4	595.1
Liquid Viscosity, cP	0.358			0.365	0.364	0.170
Liquid K, W/m/°C	0.362			0.121	0.121	0.084
Liquid Spec Heat, kJ/kg/°C	3.831			2.254	2.249	2.692
Surface Tension, dyne/cm	65				18	9
Liquid Vpr Press, Bar (a)				28.71		
Vapor Density, kg/m³	1.73	7.43	7.16		5.59	16.93
Vapor Viscosity, cP	0.011	0.011	0.011		0.011	0.011
Vapor K, W/m/°C	0.157	0.149	0.149		0.103	0.042
Vapor Spec Heat, kJ/kg/°C	7.245	4.954	4.952		3.172	2.311
Vapor Mol Wt	4.2	7.1	7.1		13.1	53.6
Enthalpy, kJ/kg	163.2	429.5	429.5	72.7	72.7	350.1
Enthalpy, MW	0.9	0.2	0.2	0.7	0.7	3.5

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	239	240	240A	241	242	243
From	11-E-109	AMINE REGEN	AMINE REGEN	AMINE REGEN	11-E-108	11-V-111
To	11-C-201	11-E-108	11-E-108	11-E-108	11-V-111	11-P-104A/B
Content	CLPS LIQUID	LEAN AMINE	LEAN AMINE	LEAN AMINE	LEAN AMINE	LEAN AMINE
START-OF-RUN						
Flow Mass, kg/hr	35576	19552	19552	19552	19552	19552
Flow Molar, kg-moles/hr	344	904	904	904	904	904
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°		19.2	19.2	19.2	19.2	19.2
Flow Condition, m³/hr						
Flow Condition, m³/hr		19.4	19.4	19.4	19.6	19.6
Temperature, °C	177	38	38	38	56	56
Pseudo Crit Temp, °C		377	377	377	377	377
Pressure, Bar (g)	8.7	6.6	5.6	5.1	3.5	3.5
Pseudo Crit Pres, Bar (a)		213.0	213.0	213.0	213.0	213.0
Wt % Vaporized	13.6	0.0	0.0	0.0	0.0	0.0
Liquid Deg API		7.5	7.5	7.5	7.5	7.5
Liquid Density, kg/m³	586.0	1006.8	1006.8	1006.8	998.2	998.2
Liquid Viscosity, cP	0.150	0.404	0.403	0.403	0.355	0.355
Liquid K, W/m/°C	0.079	0.387	0.387	0.387	0.394	0.394
Liquid Spec Heat, kJ/kg/°C	2.779	3.856	3.856	3.856	3.867	3.867
Surface Tension, dyne/cm	8					
Liquid Vpr Press, Bar (a)		0.07	0.07			0.17
Vapor Density, kg/m³	18.74					
Vapor Viscosity, cP	0.011					
Vapor K, W/m/°C	0.039					
Vapor Spec Heat, kJ/kg/°C	2.353					
Vapor Mol Wt	65.7					
Enthalpy, kJ/kg	430.6	142.6	142.6	142.6	210.0	210.0
Enthalpy, MW	4.3	0.8	0.8	0.8	1.1	1.1
END-OF-RUN						
Flow Mass, kg/hr	36100	19108	19108	19108	19108	19108
Flow Molar, kg-moles/hr	358	884	884	884	884	884
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°		18.8	18.8	18.8	18.8	18.8
Flow Condition, m³/hr						
Flow Condition, m³/hr		19.0	19.0	19.0	19.1	19.1
Temperature, °C	178	38	38	38	56	56
Pseudo Crit Temp, °C		377	377	377	377	377
Pressure, Bar (g)	8.7	6.6	5.6	5.1	3.5	3.5
Pseudo Crit Pres, Bar (a)		213.0	213.0	213.0	213.0	213.0
Wt % Vaporized	17.1	0.0	0.0	0.0	0.0	0.0
Liquid Deg API		7.5	7.5	7.5	7.5	7.5
Liquid Density, kg/m³	586.0	1006.8	1006.8	1006.8	998.2	998.2
Liquid Viscosity, cP	0.149	0.404	0.403	0.403	0.355	0.355
Liquid K, W/m/°C	0.079	0.387	0.387	0.387	0.394	0.394
Liquid Spec Heat, kJ/kg/°C	2.775	3.856	3.856	3.856	3.867	3.867
Surface Tension, dyne/cm	8					
Liquid Vpr Press, Bar (a)		0.07	0.07			0.17
Vapor Density, kg/m³	18.94					
Vapor Viscosity, cP	0.011					
Vapor K, W/m/°C	0.037					
Vapor Spec Heat, kJ/kg/°C	2.348					
Vapor Mol Wt	66.4					
Enthalpy, kJ/kg	440.8	142.6	142.6	142.6	210.0	210.0
Enthalpy, MW	4.4	0.8	0.8	0.8	1.1	1.1

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	244	245	246	247	248	249
From	11-P-104A/B	11-P-104A/B	11-V-112	11-V-112	11-V-112	11-V-112
To	11-C-101	11-C-101	AMINE ABSOR	AMINE ABSOR	AMINE REGEN	AMINE REGEN
Content	LEAN AMINE	LEAN AMINE	SOUR GAS	SOUR GAS	RICH AMINE	RICH AMINE
START-OF-RUN						
Flow Mass, kg/hr	19552	19552	5	5	20017	20017
Flow Molar, kg-moles/hr	904	904	1	1	917	917
Flow Standard, Nm³/hr			22.4	22.4		
Flow Standard, m³/hr @15.6°	19.2	19.2			19.8	19.8
Flow Condition, m³/hr			3.2	4.5		
Flow Condition, m³/hr	19.6	19.6			20.3	20.3
Temperature, °C	57	57	53	53	53	53
Pseudo Crit Temp, °C	377	377	-216	-216	372	372
Pressure, Bar (g)	149.7	143.9	10.2	6.9	10.2	8.9
Pseudo Crit Pres, Bar (a)	213.0	213.0	19	19	210.7	210.7
Wt % Vaporized	0.0	0.0	100.0	100.0	0.0	0.0
Liquid Deg API	7.5	7.5			8.7	8.7
Liquid Density, kg/m³	997.6	997.6			986.9	987.0
Liquid Viscosity, cP	0.420	0.417			0.358	0.357
Liquid K, W/m/°C	0.395	0.395			0.362	0.362
Liquid Spec Heat, kJ/kg/°C	3.869	3.869			3.831	3.831
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	0.18				0.14	
Vapor Density, kg/m³			1.57	1.11		
Vapor Viscosity, cP			0.010	0.010		
Vapor K, W/m/°C			0.163	0.163		
Vapor Spec Heat, kJ/kg/°C			7.914	7.905		
Vapor Mol Wt			5.0	5.0		
Enthalpy, kJ/kg	214.7	214.7	615.8	615.8	162.9	162.9
Enthalpy, MW	1.2	1.2	0.0	0.0	0.9	0.9
END-OF-RUN						
Flow Mass, kg/hr	19108	19108	4	4	19558	19558
Flow Molar, kg-moles/hr	884	884	1	1	895	895
Flow Standard, Nm³/hr			22.4	22.4		
Flow Standard, m³/hr @15.6°	18.8	18.8			19.4	19.4
Flow Condition, m³/hr			2.3	3.3		
Flow Condition, m³/hr	19.2	19.2			19.8	19.8
Temperature, °C	57	57	53	53	53	53
Pseudo Crit Temp, °C	377	377	-212	-212	372	372
Pressure, Bar (g)	149.7	143.9	10.2	6.9	10.2	8.9
Pseudo Crit Pres, Bar (a)	213.0	213.0	19	19	210.7	210.7
Wt % Vaporized	0.0	0.0	100.0	100.0	0.0	0.0
Liquid Deg API	7.5	7.5			8.7	8.7
Liquid Density, kg/m³	997.6	997.6			987.0	987.1
Liquid Viscosity, cP	0.420	0.417			0.358	0.357
Liquid K, W/m/°C	0.395	0.395			0.362	0.362
Liquid Spec Heat, kJ/kg/°C	3.869	3.869			3.831	3.831
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	0.18				0.14	
Vapor Density, kg/m³			1.73	1.22		
Vapor Viscosity, cP			0.011	0.011		
Vapor K, W/m/°C			0.157	0.157		
Vapor Spec Heat, kJ/kg/°C			7.245	7.237		
Vapor Mol Wt			4.0	4.0		
Enthalpy, kJ/kg	214.7	214.7	587.9	587.9	163.0	163.0
Enthalpy, MW	1.1	1.1	0.0	0.0	0.9	0.9

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	250	251	252	253	254
From	11-V-107	11-V-107	11-V-107	11-V-107	11-V-107
To	AMINE ABSOR	AMINE ABSOR	OFFPLOT	OFFPLOT	OFFPLOT
Content	SOUR GAS	SOUR GAS	SOUR WATER	SOUR WATER	SOUR WATER
START-OF-RUN					
Flow Mass, kg/hr	3	3	8258	8258	12431
Flow Molar, kg-moles/hr	1	1	448	448	679
Flow Standard, Nm³/hr	22.4	22.4			
Flow Standard, m³/hr @15.6°			8.5	8.5	12.7
Flow Condition, m³/hr	2.3	2.6			
Flow Condition, m³/hr			8.8	8.8	13.0
Temperature, °C	50	50	50	50	46
Pseudo Crit Temp, °C	-218	-218	357	357	362
Pressure, Bar (g)	8.0	7.0	8.1	2.0	2.0
Pseudo Crit Pres, Bar (a)	18	18	212.9	212.9	215.2
Wt % Vaporized	100.0	100.0	0.0	0.0	0.0
Liquid Deg API			14.9	14.9	13.4
Liquid Density, kg/m³			941.7	942.0	957.0
Liquid Viscosity, cP			0.336	0.333	0.349
Liquid K, W/m/°C			0.442	0.443	0.478
Liquid Spec Heat, kJ/kg/°C			4.117	4.117	4.129
Surface Tension, dyne/cm					
Liquid Vpr Press, Bar (a)			0.12		
Vapor Density, kg/m³	1.30	1.15			
Vapor Viscosity, cP	0.010	0.010			
Vapor K, W/m/°C	0.163	0.163			
Vapor Spec Heat, kJ/kg/°C	7.792	7.789			
Vapor Mol Wt	3.0	3.0			
Enthalpy, kJ/kg	568.1	568.1	205.5	205.5	189.6
Enthalpy, MW	0.0	0.0	0.5	0.5	0.7
END-OF-RUN					
Flow Mass, kg/hr	4	4	8664	8664	12073
Flow Molar, kg-moles/hr	1	1	471	471	659
Flow Standard, Nm³/hr	22.4	22.4			
Flow Standard, m³/hr @15.6°			9.0	9.0	12.4
Flow Condition, m³/hr	2.9	3.2			
Flow Condition, m³/hr			9.2	9.2	12.6
Temperature, °C	50	50	50	50	47
Pseudo Crit Temp, °C	-215	-215	358	358	362
Pressure, Bar (g)	8.0	7.0	8.1	2.0	2.0
Pseudo Crit Pres, Bar (a)	19	19	213.1	213.2	214.9
Wt % Vaporized	100.0	100.0	0.0	0.0	0.0
Liquid Deg API			14.7	14.7	13.6
Liquid Density, kg/m³			943.0	943.4	955.2
Liquid Viscosity, cP			0.336	0.334	0.347
Liquid K, W/m/°C			0.446	0.446	0.473
Liquid Spec Heat, kJ/kg/°C			4.118	4.118	4.127
Surface Tension, dyne/cm					
Liquid Vpr Press, Bar (a)			0.12		
Vapor Density, kg/m³	1.40	1.24			
Vapor Viscosity, cP	0.011	0.011			
Vapor K, W/m/°C	0.159	0.159			
Vapor Spec Heat, kJ/kg/°C	7.278	7.275			
Vapor Mol Wt	4.0	4.0			
Enthalpy, kJ/kg	550.1	550.1	205.7	205.7	192.1
Enthalpy, MW	0.0	0.0	0.5	0.5	0.6

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	301	302	303	304	305	306
From	11-C-201	11-EA-201	11-E-201	11-V-201	11-V-201	11-V-201
To	11-EA-201	11-E-201	11-V-201	OFFPLOT	OFFPLOT	11-P-201A/B
Content	STRIP OVHD	STRIP OVHD	STRIP OVHD	OFFGAS	OFFGAS	UNSTAB NAPH
START-OF-RUN						
Flow Mass, kg/hr	40372	40372	40372	1008	1008	35189
Flow Molar, kg-moles/hr	737	737	737	56	56	448
Flow Standard, Nm³/hr	16519.1			1255.2	1255.2	
Flow Standard, m³/hr @15.6°						53.0
Flow Condition, m³/hr	2871.6			196.4	232.6	
Flow Condition, m³/hr						55.1
Temperature, °C	139	50	38	38	37	38
Pseudo Crit Temp, °C	237			-116	-116	213
Pressure, Bar (g)	7.0	6.7	6.3	6.3	5.2	6.3
Pseudo Crit Pres, Bar (a)	91			26	26	33.9
Wt % Vaporized	100.0	3.5	2.6	100.0	100.0	0.0
Liquid Deg API						81.5
Liquid Density, kg/m³		651.6	663.6			638.7
Liquid Viscosity, cP		0.314	0.368			0.255
Liquid K, W/m/°C		0.119	0.124			0.112
Liquid Spec Heat, kJ/kg/°C		2.586	2.537			2.345
Surface Tension, dyne/cm		32	34			
Liquid Vpr Press, Bar (a)						7.31
Vapor Density, kg/m³	14.06	6.33	5.18	5.13	4.33	
Vapor Viscosity, cP	0.011	0.010	0.010	0.010	0.010	
Vapor K, W/m/°C	0.031	0.078	0.086	0.087	0.087	
Vapor Spec Heat, kJ/kg/°C	2.180	2.475	2.652	2.678	2.670	
Vapor Mol Wt	54.8	21.8	18.1	18.0	18.0	
Enthalpy, kJ/kg	806.8	105.6	70.9	405.7	405.7	50.9
Enthalpy, MW	9.0	1.2	0.8	0.1	0.1	0.5
END-OF-RUN						
Flow Mass, kg/hr	41431	41431	41431	1309	1309	36707
Flow Molar, kg-moles/hr	742	742	742	64	64	488
Flow Standard, Nm³/hr	16631.2			1434.5	1434.5	
Flow Standard, m³/hr @15.6°						56.3
Flow Condition, m³/hr	2836.7			220.4	261.2	
Flow Condition, m³/hr						58.6
Temperature, °C	133	50	38	38	37	38
Pseudo Crit Temp, °C	220			-93	-93	202
Pressure, Bar (g)	7.0	6.7	6.3	6.3	5.2	6.3
Pseudo Crit Pres, Bar (a)	81			29	29	34.6
Wt % Vaporized	100.0	4.4	3.2	100.0	100.0	0.0
Liquid Deg API						85.4
Liquid Density, kg/m³		634.0	646.2			626.1
Liquid Viscosity, cP		0.285	0.330			0.238
Liquid K, W/m/°C		0.116	0.121			0.110
Liquid Spec Heat, kJ/kg/°C		2.577	2.528			2.377
Surface Tension, dyne/cm		28	30			
Liquid Vpr Press, Bar (a)						7.31
Vapor Density, kg/m³	14.61	7.24	5.99	5.94	5.01	
Vapor Viscosity, cP	0.011	0.010	0.010	0.010	0.010	
Vapor K, W/m/°C	0.030	0.066	0.074	0.075	0.075	
Vapor Spec Heat, kJ/kg/°C	2.174	2.325	2.454	2.473	2.464	
Vapor Mol Wt	55.8	24.8	20.8	20.5	20.5	
Enthalpy, kJ/kg	749.6	107.1	71.6	401.8	401.8	51.7
Enthalpy, MW	8.6	1.2	0.8	0.1	0.1	0.5

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

Stream No	307	308	309	310	311	312
From	11-P-201A/B	11-P-201A/B	11-P-201A/B	11-P-201A/B	11-P-201A/B	11-V-201
To	11-E-301	11-E-301	11-E-301	11-C-201	11-C-201	OFFPLOT
Content	UNSTAB NAPH	UNSTAB NAPH	UNSTAB NAPH	REFLUX	REFLUX	SOUR WATER
START-OF-RUN						
Flow Mass, kg/hr	35189	15657	15657	19532	19532	4172
Flow Molar, kg-moles/hr	448	200	200	250	250	231
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	53.0	23.6	23.6	29.4	29.4	4.2
Flow Condition, m³/hr						
Flow Condition, m³/hr	55.0	24.5	24.5	30.5	30.6	4.2
Temperature, °C	38	38	38	38	38	38
Pseudo Crit Temp, °C	213	213	213	213	213	372
Pressure, Bar (g)	13.2	13.2	12.2	13.2	7.1	6.3
Pseudo Crit Pres, Bar (a)	33.9	33.9	33.9	33.9	33.9	219.6
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	81.5	81.5	81.5	81.5	81.5	10.6
Liquid Density, kg/m³	639.5	639.5	639.3	639.5	638.3	984.8
Liquid Viscosity, cP	0.256	0.256	0.255	0.256	0.254	0.385
Liquid K, W/m/°C	0.112	0.112	0.112	0.112	0.112	0.579
Liquid Spec Heat, kJ/kg/°C	2.347	2.347	2.347	2.347	2.347	4.165
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		7.31		7.31		0.07
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	52.0	52.0	52.0	52.0	52.0	158.0
Enthalpy, MW	0.5	0.2	0.2	0.3	0.3	0.2
END-OF-RUN						
Flow Mass, kg/hr	36707	13651	13651	23058	23058	3410
Flow Molar, kg-moles/hr	488	181	181	306	306	188
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	56.3	20.9	20.9	35.3	35.3	3.4
Flow Condition, m³/hr						
Flow Condition, m³/hr	58.6	21.8	21.8	36.8	36.9	3.5
Temperature, °C	38	38	38	38	38	38
Pseudo Crit Temp, °C	202	202	202	202	202	371
Pressure, Bar (g)	13.2	13.2	12.2	13.2	7.1	6.3
Pseudo Crit Pres, Bar (a)	34.6	34.6	34.6	34.6	34.6	219.2
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	85.4	85.4	85.4	85.4	85.4	10.8
Liquid Density, kg/m³	626.9	626.9	626.7	626.9	625.7	983.1
Liquid Viscosity, cP	0.239	0.239	0.239	0.239	0.238	0.384
Liquid K, W/m/°C	0.110	0.110	0.110	0.110	0.110	0.568
Liquid Spec Heat, kJ/kg/°C	2.379	2.379	2.379	2.379	2.379	4.161
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		7.31		7.31		0.07
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	52.8	52.8	52.8	52.8	52.8	157.8
Enthalpy, MW	0.5	0.2	0.2	0.3	0.3	0.1

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	313	314	315	317	318	319
From	11-V-201		11-C-201	11-P-202A/B	11-E-203	11-E-105
To	OFFPLOT	11-C-201	11-P-202A/B	11-E-203	11-E-105	11-F-201
Content	SOUR WATER	HP STEAM	STRIPPER BTMS	STRIPPER BTM	FRAC FEED	FRAC FEED
START-OF-RUN						
Flow Mass, kg/hr	4172	4830	192638	192638	192638	192638
Flow Molar, kg-moles/hr	231	268	799	799	799	799
Flow Standard, Nm³/hr		6007.0				
Flow Standard, m³/hr @15.6°			233.4	233.4	233.4	233.4
Flow Condition, m³/hr		1141.7				
Flow Condition, m³/hr			277.7	276.7	283.9	300.3
Temperature, °C	38	294	209	209	233	282
Pseudo Crit Temp, °C		374	444	444	444	444
Pressure, Bar (g)	2.0	9.8	7.2	14.9	13.9	13.0
Pseudo Crit Pres, Bar (a)		221	27.9	27.9	27.9	27.9
Wt % Vaporized	0.1	100.0	0.0	0.0	0.0	0.0
Liquid Deg API			39.9	39.9	39.9	39.9
Liquid Density, kg/m³	985.0		693.6	696.3	678.5	641.4
Liquid Viscosity, cP	0.383		0.327	0.329	0.277	0.205
Liquid K, W/m/°C	0.580		0.105	0.105	0.099	0.086
Liquid Spec Heat, kJ/kg/°C	4.165		2.820	2.822	2.930	3.138
Surface Tension, dyne/cm	70					
Liquid Vpr Press, Bar (a)			8.21			24.80
Vapor Density, kg/m³	1.87	4.23				
Vapor Viscosity, cP	0.012	0.020				
Vapor K, W/m/°C	0.083	0.043				
Vapor Spec Heat, kJ/kg/°C	2.728	2.152				
Vapor Mol Wt	16.0	18.0				
Enthalpy, kJ/kg	158.0	2970.5	464.3	465.4	534.3	680.5
Enthalpy, MW	0.2	4.0	24.8	24.9	28.6	36.4
END-OF-RUN						
Flow Mass, kg/hr	3410	4053	194344	194344	194344	194344
Flow Molar, kg-moles/hr	188	225	828	828	828	828
Flow Standard, Nm³/hr		5043.2				
Flow Standard, m³/hr @15.6°			235.4	235.4	235.4	235.4
Flow Condition, m³/hr		958.0				
Flow Condition, m³/hr			280.0	279.0	286.1	300.8
Temperature, °C	38	294	207	207	231	274
Pseudo Crit Temp, °C		374	438	438	438	438
Pressure, Bar (g)	2.0	9.8	7.2	14.9	13.9	13.0
Pseudo Crit Pres, Bar (a)		221	28.1	28.1	28.1	28.1
Wt % Vaporized	0.1	100.0	0.0	0.0	0.0	0.0
Liquid Deg API			39.9	39.9	39.9	39.9
Liquid Density, kg/m³	983.3		694.0	696.6	679.3	646.1
Liquid Viscosity, cP	0.382		0.321	0.323	0.274	0.208
Liquid K, W/m/°C	0.569		0.104	0.104	0.098	0.087
Liquid Spec Heat, kJ/kg/°C	4.161		2.804	2.806	2.907	3.095
Surface Tension, dyne/cm	70					
Liquid Vpr Press, Bar (a)			8.21			23.20
Vapor Density, kg/m³	2.23	4.23				
Vapor Viscosity, cP	0.012	0.020				
Vapor K, W/m/°C	0.069	0.043				
Vapor Spec Heat, kJ/kg/°C	2.461	2.152				
Vapor Mol Wt	19.0	18.0				
Enthalpy, kJ/kg	157.8	2970.5	457.2	458.4	527.1	655.0
Enthalpy, MW	0.1	3.3	24.7	24.7	28.5	35.4

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	320	321	322	323	324	325
From	11-F-201	11-F-201	11-C-202	11-EA-202	11-EA-202	11-V-202
To	11-C-202	11-C-202	11-EA-202	11-V-202	11-V-202	11-P-203A/B
Content	FRAC FEED	FRAC FEED	FRAC OVHD	FRAC OVHD	FRAC OVHD	WHOLE NAPH
START-OF-RUN						
Flow Mass, kg/hr	192638	192638	90527	90527	90527	83235
Flow Molar, kg-moles/hr	799	799	1177	1177	1177	772
Flow Standard, Nm³/hr			26381.3			
Flow Standard, m³/hr @15.6°				118.2	118.2	110.9
Flow Condition, m³/hr			14285.7			
Flow Condition, m³/hr				123.1	123.1	115.7
Temperature, °C	371	365	150	50	50	50
Pseudo Crit Temp, °C			325	325	325	300
Pressure, Bar (g)	3.7	2.0	1.7	1.4	1.0	1.0
Pseudo Crit Pres, Bar (a)			95	95.2	95.2	29.5
Wt % Vaporized	36.1	48.4	100.0	0.0	0.0	0.0
Liquid Deg API				53.3	53.3	57.1
Liquid Density, kg/m³	592.6	607.8		735.5	735.5	719.4
Liquid Viscosity, cP	0.189	0.222		0.439	0.439	0.390
Liquid K, W/m/°C	0.068	0.074		0.124	0.124	0.119
Liquid Spec Heat, kJ/kg/°C	3.514	3.485		2.345	2.345	2.185
Surface Tension, dyne/cm	7	8				
Liquid Vpr Press, Bar (a)				0.29		0.29
Vapor Density, kg/m³	15.82	10.82	6.34			
Vapor Viscosity, cP	0.013	0.012	0.010			
Vapor K, W/m/°C	0.039	0.037	0.024			
Vapor Spec Heat, kJ/kg/°C	2.883	2.865	2.040			
Vapor Mol Wt	163.6	178.6	76.9			
Enthalpy, kJ/kg	1038.2	1038.2	776.4	83.6	83.6	72.6
Enthalpy, MW	55.6	55.6	19.5	2.1	2.1	1.7
END-OF-RUN						
Flow Mass, kg/hr	194344	194344	98224	98224	98224	90942
Flow Molar, kg-moles/hr	828	828	1265	1265	1265	861
Flow Standard, Nm³/hr			28353.7			
Flow Standard, m³/hr @15.6°				129.0	129.0	121.7
Flow Condition, m³/hr			15299.2			
Flow Condition, m³/hr				134.4	134.4	127.0
Temperature, °C	371	365	148	50	50	50
Pseudo Crit Temp, °C			320	320	320	295
Pressure, Bar (g)	3.7	2.0	1.7	1.4	1.0	1.0
Pseudo Crit Pres, Bar (a)			91	90.8	90.8	29.9
Wt % Vaporized	38.9	50.7	100.0	0.0	0.0	0.0
Liquid Deg API				54.3	54.3	57.9
Liquid Density, kg/m³	596.3	611.3		730.8	730.8	715.8
Liquid Viscosity, cP	0.196	0.230		0.427	0.427	0.378
Liquid K, W/m/°C	0.070	0.076		0.123	0.123	0.118
Liquid Spec Heat, kJ/kg/°C	3.501	3.473		2.338	2.338	2.191
Surface Tension, dyne/cm	7	8				
Liquid Vpr Press, Bar (a)				0.32		0.32
Vapor Density, kg/m³	15.50	10.59	6.42			
Vapor Viscosity, cP	0.013	0.012	0.010			
Vapor K, W/m/°C	0.039	0.037	0.024			
Vapor Spec Heat, kJ/kg/°C	2.878	2.860	2.036			
Vapor Mol Wt	161.0	175.2	77.6			
Enthalpy, kJ/kg	1040.4	1040.4	760.3	82.9	82.9	72.8
Enthalpy, MW	56.2	56.2	20.7	2.3	2.3	1.8

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	325A	326	327	327A	329	330
From	11-P-203A/B	11-P-203A/B	11-P-205A/B	11-P-203A/B	11-P-203A/B	11-P-203A/B
To	11-E-306	11-E-306	11-E-306	11-E-306	11-C-202	11-C-202
Content	WHOLE NAPH	WHOLE NAPH	WHOLE NAPH	WHOLE NAPH	REFLUX	REFLUX
START-OF-RUN						
Flow Mass, kg/hr	83235	13839	13839	13839	69393	69393
Flow Molar, kg-moles/hr	772	128	128	128	643	643
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	110.9	18.4	18.4	18.4	92.5	92.5
Flow Condition, m³/hr						
Flow Condition, m³/hr	115.6	19.2	19.2	19.2	96.4	96.5
Temperature, °C	50	50	50	50	50	50
Pseudo Crit Temp, °C	300	300	300	300	300	300
Pressure, Bar (g)	5.7	5.7	4.4	3.9	5.7	1.7
Pseudo Crit Pres, Bar (a)	29.5	29.5	29.5	29.5	29.5	29.5
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	57.1	57.1	57.1	57.1	57.1	57.1
Liquid Density, kg/m³	719.8	719.8	719.6	719.5	719.8	719.2
Liquid Viscosity, cP	0.390	0.390	0.390	0.390	0.390	0.388
Liquid K, W/m/°C	0.119	0.119	0.119	0.119	0.119	0.119
Liquid Spec Heat, kJ/kg/°C	2.186	2.186	2.186	2.186	2.186	2.186
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		0.29	0.29		0.29	
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	73.2	73.2	73.2	73.2	73.2	73.2
Enthalpy, MW	1.7	0.3	0.3	0.3	1.4	1.4
END-OF-RUN						
Flow Mass, kg/hr	90942	17263	17263	17263	73678	73678
Flow Molar, kg-moles/hr	861	163	163	163	699	699
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	121.7	23.1	23.1	23.1	98.6	98.6
Flow Condition, m³/hr						
Flow Condition, m³/hr	127.0	24.1	24.1	24.1	102.9	103.0
Temperature, °C	50	50	50	50	50	50
Pseudo Crit Temp, °C	295	295	295	295	295	295
Pressure, Bar (g)	5.7	5.7	4.4	3.9	5.7	1.7
Pseudo Crit Pres, Bar (a)	29.9	29.9	29.9	29.9	29.9	29.9
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	57.9	57.9	57.9	57.9	57.9	57.9
Liquid Density, kg/m³	716.3	716.3	716.1	716.0	716.3	715.7
Liquid Viscosity, cP	0.379	0.379	0.378	0.378	0.379	0.377
Liquid K, W/m/°C	0.118	0.118	0.118	0.118	0.118	0.118
Liquid Spec Heat, kJ/kg/°C	2.192	2.192	2.192	2.192	2.192	2.192
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		0.32	0.32		0.32	
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	73.4	73.4	73.4	73.4	73.4	73.4
Enthalpy, MW	1.9	0.4	0.4	0.4	1.5	1.5

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	332	333	334	335	336	337
From	11-V-202	11-P-204A/B	11-P-204A/B	11-C-202	11-C-202	11-C-202
To	11-P-204A/B	11-V-108	11-V-108	11-C-203	11-C-203	11-C-203
Content	WATER	WATER	WATER	KEROSENE	KEROSENE	KEROSENE
START-OF-RUN						
Flow Mass, kg/hr	7292	7292	7292	143652	33117	33117
Flow Molar, kg-moles/hr	405	405	405	1003	231	231
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	7.3	7.3	7.3	183.2	42.2	42.2
Flow Condition, m³/hr						
Flow Condition, m³/hr	7.4	7.4	7.4	230.6	53.2	53.2
Temperature, °C	50	50	50	205	205	205
Pseudo Crit Temp, °C	374	374	374	361	361	361
Pressure, Bar (g)	1.0	6.8	5.5	1.8	1.8	1.8
Pseudo Crit Pres, Bar (a)	220.6	220.6	220.6	25.0	25.0	25.0
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	10.0	10.0	10.0	48.9	48.9	48.9
Liquid Density, kg/m³	988.0	988.0	988.0	622.8	622.8	622.8
Liquid Viscosity, cP	0.544	0.543	0.543	0.163	0.163	0.163
Liquid K, W/m/°C	0.641	0.641	0.641	0.094	0.094	0.094
Liquid Spec Heat, kJ/kg/°C	4.178	4.178	4.178	2.814	2.814	2.814
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	0.12	0.12			1.91	
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	209.2	209.8	209.8	455.4	455.4	455.4
Enthalpy, MW	0.4	0.4	0.4	18.2	4.2	4.2
END-OF-RUN						
Flow Mass, kg/hr	7282	7282	7282	143645	32786	32786
Flow Molar, kg-moles/hr	404	404	404	1006	229	229
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	7.3	7.3	7.3	182.8	41.7	41.7
Flow Condition, m³/hr						
Flow Condition, m³/hr	7.4	7.4	7.4	230.0	52.5	52.5
Temperature, °C	50	50	50	205	205	205
Pseudo Crit Temp, °C	374	374	374	362	362	362
Pressure, Bar (g)	1.0	6.8	5.5	1.8	1.8	1.8
Pseudo Crit Pres, Bar (a)	220.6	220.6	220.6	25.1	25.1	25.1
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	10.0	10.0	10.0	48.5	48.5	48.5
Liquid Density, kg/m³	988.0	988.0	988.0	624.4	624.4	624.4
Liquid Viscosity, cP	0.544	0.543	0.543	0.164	0.164	0.164
Liquid K, W/m/°C	0.641	0.641	0.641	0.094	0.094	0.094
Liquid Spec Heat, kJ/kg/°C	4.178	4.178	4.178	2.806	2.806	2.806
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	0.12	0.12			1.91	
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	209.2	209.8	209.8	453.6	453.6	453.6
Enthalpy, MW	0.4	0.4	0.4	18.1	4.1	4.1

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	338	339	340	340A	341	341A
From	11-C-203	11-C-202	11-P-207A/B	11-P-207A-B	11-E-110	11-E-101
To	11-C-202	11-P-207A/B	11-E-101	11-E-101	11-C-202	11-E-110
Content	STRIP OVHD	KERO PA	KERO PA	KERO PA	KERO PA	KERO PA
START-OF-RUN						
Flow Mass, kg/hr	11523	110535	110535	110535	110535	110535
Flow Molar, kg-moles/hr	87	770	770	770	770	770
Flow Standard, Nm³/hr	1950.0					
Flow Standard, m³/hr @15.6°		140.9	140.9	140.9	140.9	140.9
Flow Condition, m³/hr	1162.3					
Flow Condition, m³/hr		177.5	176.8	176.8	164.9	172.6
Temperature, °C	219	205	206	206	157	190
Pseudo Crit Temp, °C	347	361	361	361	361	361
Pressure, Bar (g)	1.8	1.8	7.1	6.6	4.2	5.7
Pseudo Crit Pres, Bar (a)	28	25.0	25.0	25.0	25.0	25.0
Wt % Vaporized	100.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API		48.9	48.9	48.9	48.9	48.9
Liquid Density, kg/m³		622.8	625.4	625.1	670.1	640.3
Liquid Viscosity, cP		0.163	0.164	0.164	0.234	0.185
Liquid K, W/m/°C		0.094	0.094	0.094	0.105	0.098
Liquid Spec Heat, kJ/kg/°C		2.814	2.815	2.815	2.605	2.747
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		1.91	1.91		1.00	
Vapor Density, kg/m³	9.91					
Vapor Viscosity, cP	0.010					
Vapor K, W/m/°C	0.027					
Vapor Spec Heat, kJ/kg/°C	2.318					
Vapor Mol Wt	132.4					
Enthalpy, kJ/kg	748.7	455.4	456.3	456.3	324.9	412.6
Enthalpy, MW	2.4	14.0	14.0	14.0	10.0	12.7
END-OF-RUN						
Flow Mass, kg/hr	11328	110859	110859	110859	110859	110859
Flow Molar, kg-moles/hr	86	776	776	776	776	776
Flow Standard, Nm³/hr	1927.6					
Flow Standard, m³/hr @15.6°		141.1	141.1	141.1	141.1	141.1
Flow Condition, m³/hr	1148.6					
Flow Condition, m³/hr		177.5	176.8	176.9	164.8	172.7
Temperature, °C	218	205	205	205	156	190
Pseudo Crit Temp, °C	346	362	362	362	362	362
Pressure, Bar (g)	1.8	1.8	7.1	6.6	4.2	5.7
Pseudo Crit Pres, Bar (a)	28	25.1	25.1	25.1	25.1	25.1
Wt % Vaporized	100.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API		48.5	48.5	48.5	48.5	48.5
Liquid Density, kg/m³		624.4	626.9	626.7	672.7	641.9
Liquid Viscosity, cP		0.164	0.164	0.164	0.237	0.186
Liquid K, W/m/°C		0.094	0.094	0.094	0.106	0.098
Liquid Spec Heat, kJ/kg/°C		2.806	2.807	2.807	2.593	2.739
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		1.91	1.91		0.97	
Vapor Density, kg/m³	9.86					
Vapor Viscosity, cP	0.010					
Vapor K, W/m/°C	0.027					
Vapor Spec Heat, kJ/kg/°C	2.310					
Vapor Mol Wt	131.7					
Enthalpy, kJ/kg	746.9	453.6	454.5	454.5	320.7	411.0
Enthalpy, MW	2.4	14.0	14.0	14.0	9.9	12.7

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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CLG
Chevron Lummus Global LLC

Stream No	341B	342	343	344	345	346
From	11-E-101	11-E-110	11-C-203	11-E-202	11-C-203	11-P-206A/B
To	11-E-110	11-C-202	11-E-202	11-C-203	11-P-206A/B	11-E-109
Content	KERO PA	KERO PA	KEROSENE	KEROSENE	KEROSENE	KEROSENE
START-OF-RUN						
Flow Mass, kg/hr	110535	110535	62406	62406	21593	21593
Flow Molar, kg-moles/hr	770	770	424	424	144	144
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	140.9	140.9	79.3		27.4	27.4
Flow Condition, m³/hr						
Flow Condition, m³/hr	172.7	165.2	103.6		35.9	35.6
Temperature, °C	190	157	228	232	232	233
Pseudo Crit Temp, °C	361	361	367		370	370
Pressure, Bar (g)	5.2	1.8	1.9	1.9	1.9	9.3
Pseudo Crit Pres, Bar (a)	25.0	25.0	23.6		23.3	23.3
Wt % Vaporized	0.0	0.0	0.0	28.9	0.0	0.0
Liquid Deg API	48.9	48.9	48.4		48.1	48.1
Liquid Density, kg/m³	640.1	669.2	602.6	601.6	601.3	605.7
Liquid Viscosity, cP	0.185	0.234	0.141	0.140	0.140	0.140
Liquid K, W/m/°C	0.098	0.105	0.088	0.088	0.088	0.088
Liquid Spec Heat, kJ/kg/°C	2.747	2.605	2.910	2.924	2.925	2.927
Surface Tension, dyne/cm				9		
Liquid Vpr Press, Bar (a)					2.01	
Vapor Density, kg/m³				10.54		
Vapor Viscosity, cP				0.010		
Vapor K, W/m/°C				0.027		
Vapor Spec Heat, kJ/kg/°C				2.372		
Vapor Mol Wt				142.0		
Enthalpy, kJ/kg	412.6	324.9	520.6	601.1	531.5	532.8
Enthalpy, MW	12.7	10.0	9.0	10.4	3.2	3.2
END-OF-RUN						
Flow Mass, kg/hr	110859	110859	61337	61337	21458	21458
Flow Molar, kg-moles/hr	776	776	417	417	144	144
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	141.1	141.1	77.8		27.2	27.2
Flow Condition, m³/hr						
Flow Condition, m³/hr	172.8	165.0	101.5		35.6	35.3
Temperature, °C	190	156	228	232	232	233
Pseudo Crit Temp, °C	362	362	367		371	371
Pressure, Bar (g)	5.2	1.8	1.9	1.9	1.9	9.3
Pseudo Crit Pres, Bar (a)	25.1	25.1	23.7		23.4	23.4
Wt % Vaporized	0.0	0.0	0.0	28.9	0.0	0.0
Liquid Deg API	48.5	48.5	48.0		47.7	47.7
Liquid Density, kg/m³	641.6	671.8	604.3	603.3	603.1	607.4
Liquid Viscosity, cP	0.186	0.237	0.142	0.141	0.140	0.141
Liquid K, W/m/°C	0.098	0.106	0.089	0.088	0.088	0.088
Liquid Spec Heat, kJ/kg/°C	2.739	2.593	2.902	2.916	2.917	2.919
Surface Tension, dyne/cm				9		
Liquid Vpr Press, Bar (a)					2.01	
Vapor Density, kg/m³				10.51		
Vapor Viscosity, cP				0.010		
Vapor K, W/m/°C				0.027		
Vapor Spec Heat, kJ/kg/°C				2.366		
Vapor Mol Wt				141.7		
Enthalpy, kJ/kg	411.0	320.7	518.9	599.7	529.9	531.2
Enthalpy, MW	12.7	9.9	8.8	10.2	3.2	3.2

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	347	348	349	350	351	352
From	11-E-109	11-EA-203	11-E-204	11-E-204	11-C-202	11-C-202
To	11-EA-203	11-E-204	OFFPLOT	OFFPLOT	11-C-204	11-C-204
Content	KEROSENE	KEROSENE	KEROSENE	KEROSENE	DIESEL	DIESEL
START-OF-RUN						
Flow Mass, kg/hr	21593	21593	21593	21593	182345	99070
Flow Molar, kg-moles/hr	144	144	144	144	813	442
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	27.4	27.4	27.4	27.4	222.9	121.0
Flow Condition, m³/hr						
Flow Condition, m³/hr	33.0	28.4	28.1	28.1	296.9	161.3
Temperature, °C	183	50	38	38	287	287
Pseudo Crit Temp, °C	370	370	370	370	446	446
Pressure, Bar (g)	8.3	7.0	6.1	5.0	1.9	1.9
Pseudo Crit Pres, Bar (a)	23.3	23.3	23.3	23.3	18.5	18.5
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	48.1	48.1	48.1	48.1	41.3	41.3
Liquid Density, kg/m³	654.4	760.2	769.3	769.2	614.2	614.2
Liquid Viscosity, cP	0.208	0.693	0.835	0.834	0.175	0.175
Liquid K, W/m/°C	0.101	0.127	0.129	0.129	0.086	0.086
Liquid Spec Heat, kJ/kg/°C	2.711	2.135	2.082	2.082	3.141	3.141
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)			< 0.01			2.01
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	392.9	70.9	45.2	45.2	694.2	694.2
Enthalpy, MW	2.4	0.4	0.3	0.3	35.2	19.1
END-OF-RUN						
Flow Mass, kg/hr	21458	21458	21458	21458	184888	96240
Flow Molar, kg-moles/hr	144	144	144	144	829	432
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	27.2	27.2	27.2	27.2	225.2	117.2
Flow Condition, m³/hr						
Flow Condition, m³/hr	32.5	28.2	27.8	27.8	299.8	156.1
Temperature, °C	178	50	38	38	287	287
Pseudo Crit Temp, °C	371	371	371	371	447	447
Pressure, Bar (g)	8.3	7.0	6.1	5.0	1.9	1.9
Pseudo Crit Pres, Bar (a)	23.4	23.4	23.4	23.4	18.6	18.6
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	47.7	47.7	47.7	47.7	40.8	40.8
Liquid Density, kg/m³	660.5	761.9	771.1	771.0	616.7	616.7
Liquid Viscosity, cP	0.217	0.699	0.842	0.841	0.177	0.177
Liquid K, W/m/°C	0.102	0.127	0.129	0.129	0.087	0.087
Liquid Spec Heat, kJ/kg/°C	2.683	2.129	2.077	2.077	3.128	3.128
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)			< 0.01			2.01
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	378.7	70.7	45.0	45.0	689.4	689.4
Enthalpy, MW	2.3	0.4	0.3	0.3	35.4	18.4

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	353	354	355	356	357	358
From	11-C-202	11-C-204	11-C-202	11-P-209A/B	11-P-209A/B	11-E-203
To	11-C-204	11-C-202	11-P-209A/B	11-E-203	11-E-203	11-C-202
Content	DIESEL	STRIP OVHD	DIESEL PA	DIESEL PA	DIESEL PA	DIESEL PA
START-OF-RUN						
Flow Mass, kg/hr	99070	32821	83266	83266	83266	83266
Flow Molar, kg-moles/hr	442	287	371	371	371	371
Flow Standard, Nm³/hr		6432.8				
Flow Standard, m³/hr @15.6°	121.0		101.7	101.7	101.7	101.7
Flow Condition, m³/hr		4258.9				
Flow Condition, m³/hr	161.3		135.6	134.9	135.1	125.8
Temperature, °C	287	281	287	288	288	235
Pseudo Crit Temp, °C	446	396	446	446	446	446
Pressure, Bar (g)	1.9	1.9	1.9	5.7	5.0	4.0
Pseudo Crit Pres, Bar (a)	18.5	107	18.5	18.5	18.5	18.5
Wt % Vaporized	0.0	100.0	0.0	0.0	0.0	0.0
Liquid Deg API	41.3		41.3	41.3	41.3	41.3
Liquid Density, kg/m³	614.2		614.2	617.1	616.5	661.9
Liquid Viscosity, cP	0.175		0.175	0.176	0.176	0.263
Liquid K, W/m/°C	0.086		0.086	0.086	0.086	0.101
Liquid Spec Heat, kJ/kg/°C	3.141		3.141	3.142	3.142	2.902
Surface Tension, dyne/cm						
Liquid Vpr Prcc, Bar (a)			2.01	2.01		0.97
Vapor Density, kg/m³		7.71				
Vapor Viscosity, cP		0.012				
Vapor K, W/m/°C		0.032				
Vapor Spec Heat, kJ/kg/°C		2.539				
Vapor Mol Wt		114.4				
Enthalpy, kJ/kg	694.2	1032.9	694.2	694.8	694.8	535.0
Enthalpy, MW	19.1	9.4	16.1	16.1	16.1	12.4
END-OF-RUN						
Flow Mass, kg/hr	96240	31858	88649	88649	88649	88649
Flow Molar, kg-moles/hr	432	283	397	397	397	397
Flow Standard, Nm³/hr		6343.2				
Flow Standard, m³/hr @15.6°	117.2		108.0	108.0	108.0	108.0
Flow Condition, m³/hr		4195.9				
Flow Condition, m³/hr	156.1		143.7	143.1	143.2	133.9
Temperature, °C	287	280	287	287	287	237
Pseudo Crit Temp, °C	447	395	447	447	447	447
Pressure, Bar (g)	1.9	1.9	1.9	5.7	5.0	4.0
Pseudo Crit Pres, Bar (a)	18.6	108	18.6	18.6	18.6	18.6
Wt % Vaporized	0.0	100.0	0.0	0.0	0.0	0.0
Liquid Deg API	40.8		40.8	40.8	40.8	40.8
Liquid Density, kg/m³	616.7		616.7	619.6	619.0	662.1
Liquid Viscosity, cP	0.177		0.177	0.178	0.178	0.262
Liquid K, W/m/°C	0.087		0.087	0.086	0.086	0.100
Liquid Spec Heat, kJ/kg/°C	3.128		3.128	3.128	3.128	2.914
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)			2.01	2.01		1.00
Vapor Density, kg/m³		7.59				
Vapor Viscosity, cP		0.012				
Vapor K, W/m/°C		0.032				
Vapor Spec Heat, kJ/kg/°C		2.528				
Vapor Mol Wt		112.6				
Enthalpy, kJ/kg	689.4	1033.6	689.4	690.0	690.0	539.3
Enthalpy, MW	18.4	9.1	17.0	17.0	17.0	13.3

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	361	362	363	363A	364	366
From	11-E-203	11-C-204	11-P-208A-B	11-P-208A-B	11-E-102A-B	11-E-301
To	11-C-202	11-P-208A/B	11-E-102A-B	11-E-102A-B	11-E-301	DIESEL DRYER
Content	DIESEL PA	DIESEL	DIESEL	DIESEL	DIESEL	DIESEL
START-OF-RUN						
Flow Mass, kg/hr	83266	68539	68539	68539	68539	68539
Flow Molar, kg-moles/hr	371	281	281	281	281	281
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	101.7	83.0	83.0	83.0	83.0	83.0
Flow Condition, m³/hr						
Flow Condition, m³/hr	126.0	105.0	104.5	104.6	98.7	97.5
Temperature, °C	235	259	259	259	207	195
Pseudo Crit Temp, °C	446	466	466	466	466	466
Pressure, Bar (g)	1.9	2.0	11.7	10.9	9.5	8.6
Pseudo Crit Pres, Bar (a)	18.5	19.4	19.4	19.4	19.4	19.4
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	41.3	39.8	39.8	39.8	39.8	39.8
Liquid Density, kg/m³	660.8	653.0	655.9	655.4	694.2	702.7
Liquid Viscosity, cP	0.263	0.257	0.258	0.258	0.371	0.403
Liquid K, W/m/°C	0.101	0.098	0.098	0.098	0.110	0.113
Liquid Spec Heat, kJ/kg/°C	2.902	3.013	3.014	3.014	2.790	2.736
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		3.01	3.01			
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	535.0	605.9	606.6	606.6	455.6	421.1
Enthalpy, MW	12.4	11.5	11.5	11.5	8.7	8.0
END-OF-RUN						
Flow Mass, kg/hr	88649	66672	66672	66672	66672	66672
Flow Molar, kg-moles/hr	397	274	274	274	274	274
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	108.0	80.5	80.5	80.5	80.5	80.5
Flow Condition, m³/hr						
Flow Condition, m³/hr	134.1	101.7	101.2	101.3	95.5	94.5
Temperature, °C	237	258	258	258	205	193
Pseudo Crit Temp, °C	447	466	466	466	466	466
Pressure, Bar (g)	1.9	2.0	11.7	10.9	9.5	8.6
Pseudo Crit Pres, Bar (a)	18.6	19.5	19.5	19.5	19.5	19.5
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	40.8	39.4	39.4	39.4	39.4	39.4
Liquid Density, kg/m³	660.9	655.8	658.6	658.1	698.2	705.9
Liquid Viscosity, cP	0.261	0.261	0.262	0.262	0.382	0.411
Liquid K, W/m/°C	0.100	0.099	0.099	0.099	0.111	0.113
Liquid Spec Heat, kJ/kg/°C	2.914	2.999	3.000	3.000	2.769	2.720
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		3.01	3.01			
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	539.3	601.0	601.7	601.7	446.4	415.1
Enthalpy, MW	13.3	11.1	11.1	11.1	8.3	7.7

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	367	368	369	370	371	372
From	DIESEL DRYER	VAC DRYER	LP STEAM	LP STEAM	11-C-202	11-P-210A/B
To	OFFPLOT	OFFPLOT	11-C-204	11-C-202	11-P-210A/B	11-E-202
Content	DIESEL	DIESEL	LP STEAM	LP STEAM	FRAC BTMS	FRAC BTMS
START-OF-RUN						
Flow Mass, kg/hr	68460	68460	2291	4459	88124	88124
Flow Molar, kg-moles/hr	276	276	127	248	216	216
Flow Standard, Nm³/hr			2846.6	5558.7		
Flow Standard, m³/hr @15.6°	82.9	82.9			104.0	104.0
Flow Condition, m³/hr			1416.0	2756.0		
Flow Condition, m³/hr	85.6	85.7			137.7	135.1
Temperature, °C	50	50	254	254	344	344
Pseudo Crit Temp, °C	467	467	374	374	561	561
Pressure, Bar (g)	6.3	5.0	2.9	2.9	2.1	13.9
Pseudo Crit Pres, Bar (a)	16.2	16.2	221	221	14.3	14.3
Wt % Vaporized	0.0	0.0	100.0	100.0	0.0	0.0
Liquid Deg API	39.9	39.9			35.5	35.5
Liquid Density, kg/m³	799.3	799.3			640.0	652.3
Liquid Viscosity, cP	2.088	2.084			0.320	0.323
Liquid K, W/m/°C	0.139	0.139			0.089	0.089
Liquid Spec Heat, kJ/kg/°C	2.110	2.110			3.403	3.406
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	< 0.01				3.11	3.11
Vapor Density, kg/m³			1.62	1.62		
Vapor Viscosity, cP			0.018	0.018		
Vapor K, W/m/°C			0.039	0.039		
Vapor Spec Heat, kJ/kg/°C			2.043	2.043		
Vapor Mol Wt			18.0	18.0		
Enthalpy, kJ/kg	70.1	70.1	2905.6	2905.6	881.9	883.8
Enthalpy, MW	1.3	1.3	1.8	3.6	21.6	21.6
END-OF-RUN						
Flow Mass, kg/hr	66595	66595	2291	4459	88416	88416
Flow Molar, kg-moles/hr	270	270	127	248	216	216
Flow Standard, Nm³/hr			2846.6	5558.7		
Flow Standard, m³/hr @15.6°	80.4	80.4			104.0	104.0
Flow Condition, m³/hr			1416.0	2756.0		
Flow Condition, m³/hr	83.1	83.1			137.7	135.1
Temperature, °C	50	50	254	254	344	345
Pseudo Crit Temp, °C	468	468	374	374	563	563
Pressure, Bar (g)	6.3	5.0	2.9	2.9	2.1	13.9
Pseudo Crit Pres, Bar (a)	16.3	16.3	221	221	14.3	14.3
Wt % Vaporized	0.0	0.0	100.0	100.0	0.0	0.0
Liquid Deg API	39.4	39.4			35.0	35.0
Liquid Density, kg/m³	801.5	801.5			642.3	654.5
Liquid Viscosity, cP	2.113	2.109			0.324	0.328
Liquid K, W/m/°C	0.139	0.139			0.090	0.089
Liquid Spec Heat, kJ/kg/°C	2.103	2.103			3.392	3.395
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)	< 0.01				3.11	3.11
Vapor Density, kg/m³			1.62	1.62		
Vapor Viscosity, cP			0.018	0.018		
Vapor K, W/m/°C			0.039	0.039		
Vapor Spec Heat, kJ/kg/°C			2.043	2.043		
Vapor Mol Wt			18.0	18.0		
Enthalpy, kJ/kg	69.8	69.8	2905.6	2905.6	879.3	881.2
Enthalpy, MW	1.3	1.3	1.8	3.6	21.6	21.6

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	373	374	375	376	377	378
From	11-P-210A/B	11-E-202	11-E-202	11-E-303	11-E-303	11-E-305
To	11-E-202	11-E-303	11-E-303	11-E-305	11-E-305	11-V-102
Content	FRAC BTMS	FRAC BTMS	FRAC BTMS	FRAC BTMS	FRAC BTMS	FRAC BTMS
START-OF-RUN						
Flow Mass, kg/hr	88124	88124	88124	88124	88124	88124
Flow Molar, kg-moles/hr	216	216	216	216	216	216
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	104.0	104.0	104.0	104.0	104.0	104.0
Flow Condition, m³/hr						
Flow Condition, m³/hr	135.2	133.1	133.2	130.0	130.1	125.8
Temperature, °C	344	327	327	301	301	262
Pseudo Crit Temp, °C	561	561	561	561	561	561
Pressure, Bar (g)	13.2	12.5	11.7	11.0	10.3	9.6
Pseudo Crit Pres, Bar (a)	14.3	14.3	14.3	14.3	14.3	14.3
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	35.5	35.5	35.5	35.5	35.5	35.5
Liquid Density, kg/m³	651.6	662.2	661.5	678.1	677.5	700.4
Liquid Viscosity, cP	0.323	0.355	0.355	0.410	0.410	0.508
Liquid K, W/m/°C	0.089	0.094	0.094	0.102	0.102	0.112
Liquid Spec Heat, kJ/kg/°C	3.406	3.331	3.331	3.215	3.215	3.048
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		2.30		1.38		
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	883.8	826.8	826.8	739.3	739.3	619.6
Enthalpy, MW	21.6	20.2	20.2	18.1	18.1	15.2
END-OF-RUN						
Flow Mass, kg/hr	88416	88416	88416	88416	88416	88416
Flow Molar, kg-moles/hr	216	216	216	216	216	216
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	104.0	104.0	104.0	104.0	104.0	104.0
Flow Condition, m³/hr						
Flow Condition, m³/hr	135.2	133.1	133.3	130.4	130.5	126.2
Temperature, °C	345	328	328	304	304	266
Pseudo Crit Temp, °C	563	563	563	563	563	563
Pressure, Bar (g)	13.2	12.5	11.7	11.0	10.3	9.6
Pseudo Crit Pres, Bar (a)	14.3	14.3	14.3	14.3	14.3	14.3
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	35.0	35.0	35.0	35.0	35.0	35.0
Liquid Density, kg/m³	653.7	664.2	663.5	678.3	677.6	700.5
Liquid Viscosity, cP	0.328	0.360	0.359	0.408	0.408	0.504
Liquid K, W/m/°C	0.089	0.095	0.095	0.102	0.102	0.112
Liquid Spec Heat, kJ/kg/°C	3.395	3.321	3.321	3.218	3.218	3.052
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		2.30		1.65		
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	881.2	825.1	825.1	747.5	747.5	628.2
Enthalpy, MW	21.6	20.3	20.3	18.4	18.4	15.4

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

Stream No	380	381	382	383
From	11-E-305	11-E-305	11-EA-204	11-EA-204
To	11-V-102	11-EA-204	OFFPLOT	OFFPLOT
Content	2ND STG FEED	FRAC BTMS	FRAC BTMS	FRAC BTMS
START-OF-RUN				
Flow Mass, kg/hr	85689	2434	2434	2434
Flow Molar, kg-moles/hr	209	6	6	6
Flow Standard, Nm³/hr				
Flow Standard, m³/hr @15.6°	101.1	2.9	2.9	2.9
Flow Condition, m³/hr				
Flow Condition, m³/hr	122.4	3.5	3.1	3.1
Temperature, °C	262	262	90	90
Pseudo Crit Temp, °C	561	561	561	561
Pressure, Bar (g)	9.3	9.3	8.3	5.0
Pseudo Crit Pres, Bar (a)	14.3	14.3	14.3	14.3
Wt % Vaporized	0.0	0.0	0.0	0.0
Liquid Deg API	35.5	35.5	35.5	35.5
Liquid Density, kg/m³	700.2	700.2	797.0	796.8
Liquid Viscosity, cP	0.508	0.508	2.999	2.984
Liquid K, W/m/°C	0.112	0.112	0.146	0.146
Liquid Spec Heat, kJ/kg/°C	3.048	3.048	2.298	2.298
Surface Tension, dyne/cm				
Liquid Vpr Press, Bar (a)	0.56		< 0.01	
Vapor Density, kg/m³				
Vapor Viscosity, cP				
Vapor K, W/m/°C				
Vapor Spec Heat, kJ/kg/°C				
Vapor Mol Wt				
Enthalpy, kJ/kg	619.6	619.6	159.0	159.0
Enthalpy, MW	14.7	0.4	0.1	0.1
END-OF-RUN				
Flow Mass, kg/hr	85969	2447	2447	2447
Flow Molar, kg-moles/hr	209	6	6	6
Flow Standard, Nm³/hr				
Flow Standard, m³/hr @15.6°	101.2	2.9	2.9	2.9
Flow Condition, m³/hr				
Flow Condition, m³/hr	122.8	3.5	3.1	3.1
Temperature, °C	266	266	90	90
Pseudo Crit Temp, °C	563	563	563	563
Pressure, Bar (g)	9.3	9.3	8.3	5.0
Pseudo Crit Pres, Bar (a)	14.3	14.3	14.3	14.3
Wt % Vaporized	0.0	0.0	0.0	0.0
Liquid Deg API	35.0	35.0	35.0	35.0
Liquid Density, kg/m³	700.4	700.4	799.4	799.3
Liquid Viscosity, cP	0.504	0.504	3.063	3.048
Liquid K, W/m/°C	0.112	0.112	0.146	0.146
Liquid Spec Heat, kJ/kg/°C	3.052	3.052	2.290	2.290
Surface Tension, dyne/cm				
Liquid Vpr Press, Bar (a)	0.69		< 0.01	
Vapor Density, kg/m³				
Vapor Viscosity, cP				
Vapor K, W/m/°C				
Vapor Spec Heat, kJ/kg/°C				
Vapor Mol Wt				
Enthalpy, kJ/kg	628.2	628.2	158.4	158.4
Enthalpy, MW	15.0	0.4	0.1	0.1

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	403	404	405	406	407	408
From	11-E-301	11-C-301	11-E-302	11-V-301	11-V-301	11-V-301
To	11-C-301	11-E-302	11-V-301	AMINE ABSOR	AMINE ABSOR	11-P-303A/B
Content	NAPHTHA	STAB OVHD	STAB OVHD	OFFGAS	OFFGAS	LPG
START-OF-RUN						
Flow Mass, kg/hr	15657	13590	13590	80	80	13507
Flow Molar, kg-moles/hr	200	254	254	0	0	251
Flow Standard, Nm³/hr		5693.2		0.0	0.0	
Flow Standard, m³/hr @15.6°	23.6					24.3
Flow Condition, m³/hr		571.7		5.8	9.7	
Flow Condition, m³/hr	27.9					25.8
Temperature, °C	99	78	38	38	34	38
Pseudo Crit Temp, °C	213	127		3	3	128
Pressure, Bar (g)	9.9	9.9	9.1	9.1	5.2	9.1
Pseudo Crit Pres, Bar (a)	33.9	39		37	37	38.4
Wt % Vaporized	0.0	100.0	0.7	100.0	100.0	0.0
Liquid Deg API	81.5					122.6
Liquid Density, kg/m³	560.9		523.0			522.9
Liquid Viscosity, cP	0.154		0.146			0.146
Liquid K, W/m/°C	0.088		0.096			0.096
Liquid Spec Heat, kJ/kg/°C	2.620		2.701			2.700
Surface Tension, dyne/cm			8			
Liquid Vpr Press, Bar (a)						10.11
Vapor Density, kg/m³		23.77	13.79	13.79	8.29	
Vapor Viscosity, cP		0.010	0.010	0.010	0.009	
Vapor K, W/m/°C		0.025	0.041	0.041	0.040	
Vapor Spec Heat, kJ/kg/°C		2.075	2.033	2.033	1.979	
Vapor Mol Wt		53.5	33.8	32.8	32.8	
Enthalpy, kJ/kg	202.5	445.0	60.9	385.8	385.8	58.9
Enthalpy, MW	0.9	1.7	0.2	0.0	0.0	0.2
END-OF-RUN						
Flow Mass, kg/hr	13651	13208	13208	84	84	13122
Flow Molar, kg-moles/hr	181	248	248	0	0	245
Flow Standard, Nm³/hr		5558.7		0.0	0.0	
Flow Standard, m³/hr @15.6°	20.9					23.7
Flow Condition, m³/hr		558.4		5.9	9.8	
Flow Condition, m³/hr	25.1					25.2
Temperature, °C	99	77	38	38	34	38
Pseudo Crit Temp, °C	202	125		15	15	126
Pressure, Bar (g)	9.9	9.9	9.1	9.1	5.2	9.1
Pseudo Crit Pres, Bar (a)	34.6	39		39	39	38.5
Wt % Vaporized	0.0	100.0	0.6	100.0	100.0	0.0
Liquid Deg API	85.4					123.9
Liquid Density, kg/m³	544.3		521.1			521.1
Liquid Viscosity, cP	0.146		0.146			0.146
Liquid K, W/m/°C	0.086		0.096			0.096
Liquid Spec Heat, kJ/kg/°C	2.652		2.705			2.704
Surface Tension, dyne/cm			8			
Liquid Vpr Press, Bar (a)						10.11
Vapor Density, kg/m³		23.65	14.35	14.35	8.61	
Vapor Viscosity, cP		0.010	0.010	0.010	0.009	
Vapor K, W/m/°C		0.025	0.037	0.037	0.036	
Vapor Spec Heat, kJ/kg/°C		2.073	2.004	2.004	1.946	
Vapor Mol Wt		53.3	33.9	33.9	33.9	
Enthalpy, kJ/kg	205.2	443.8	61.1	383.6	383.6	59.0
Enthalpy, MW	0.8	1.6	0.2	0.0	0.0	0.2

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	409	410	411	412	413	414
From	11-P-303A/B	11-P-303A/B	11-P-303A/B	11-P-303A/B	11-P-303A/B	11-C-301
To	OFFPLOT	11-C-301	11-C-301	OFFPLOT	OFFPLOT	11-E-303
Content	LPG	REFLUX	REFLUX	LPG	LPG	NAPHTHA
START-OF-RUN						
Flow Mass, kg/hr	13507	10818	10818	2688	2688	90257
Flow Molar, kg-moles/hr	251	200	200	48	48	1057
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	24.3	19.4	19.4	4.8	4.8	131.1
Flow Condition, m³/hr						
Flow Condition, m³/hr	25.8	20.6	20.7	5.1	5.1	180.7
Temperature, °C	38	38	38	38	38	176
Pseudo Crit Temp, °C	128	128	128	128	128	239
Pressure, Bar (g)	15.3	15.3	9.9	15.3	14.0	10.1
Pseudo Crit Pres, Bar (a)	38.4	38.4	38.4	38.4	38.4	32.1
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	122.6	122.6	122.6	122.6	122.6	74.1
Liquid Density, kg/m³	524.2	524.2	522.5	524.2	523.8	499.4
Liquid Viscosity, cP	0.147	0.147	0.146	0.147	0.146	0.088
Liquid K, W/m/°C	0.096	0.096	0.095	0.096	0.096	0.054
Liquid Spec Heat, kJ/kg/°C	2.702	2.702	2.702	2.702	2.702	2.927
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		10.11		10.11		
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	60.1	60.1	60.1	60.1	60.1	415.7
Enthalpy, MW	0.2	0.2	0.2	0.0	0.0	10.4
END-OF-RUN						
Flow Mass, kg/hr	13122	10265	10265	2856	2856	80992
Flow Molar, kg-moles/hr	245	193	193	52	52	973
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	23.7	18.5	18.5	5.2	5.2	118.8
Flow Condition, m³/hr						
Flow Condition, m³/hr	25.1	19.7	19.7	5.5	5.5	163.2
Temperature, °C	38	38	38	38	38	171
Pseudo Crit Temp, °C	126	126	126	126	126	233
Pressure, Bar (g)	15.3	15.3	9.9	15.3	14.0	10.1
Pseudo Crit Pres, Bar (a)	38.5	38.5	38.5	38.5	38.5	32.4
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	123.9	123.9	123.9	123.9	123.9	76.1
Liquid Density, kg/m³	522.3	522.4	520.7	522.4	522.0	496.1
Liquid Viscosity, cP	0.147	0.147	0.146	0.147	0.146	0.089
Liquid K, W/m/°C	0.096	0.096	0.095	0.096	0.096	0.054
Liquid Spec Heat, kJ/kg/°C	2.706	2.706	2.706	2.706	2.706	2.924
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		10.11		10.11		
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	60.2	60.2	60.2	60.2	60.2	397.5
Enthalpy, MW	0.2	0.2	0.2	0.0	0.0	8.9

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
			08/22/2007	0

STREAM DATA SHEETS
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	415	416	417	418	420	421
From	11-E-303	11-C-301	11-C-301	11-E-306	11-C-302	11-EA-301
To	11-C-301	11-C-302	11-C-302	11-C-302	11-EA-301	11-V-302
Content	NAPHTHA	NAPHTHA	NAPHTHA	NAPHTHA	SPLITTER OVHD	SPLITTER OVHD
START-OF-RUN						
Flow Mass, kg/hr	90257	12974	12974	13839	27138	27138
Flow Molar, kg-moles/hr	1057	148	148	128	336	336
Flow Standard, Nm³/hr					7531.1	
Flow Standard, m³/hr @15.6°		18.7		18.4		40.6
Flow Condition, m³/hr					3546.5	
Flow Condition, m³/hr		25.9		20.8		42.8
Temperature, °C	180	180	117	110	101	50
Pseudo Crit Temp, °C		243		300	226	226
Pressure, Bar (g)	10.1	10.1	1.9	1.9	1.7	1.4
Pseudo Crit Pres, Bar (a)		31.9		29.5	33	32.7
Wt % Vaporized	28.8	0.0	56.8	0.0	100.0	0.0
Liquid Deg API		72.6		57.1		80.1
Liquid Density, kg/m³	501.0	501.0	603.9	664.7		633.8
Liquid Viscosity, cP	0.085	0.085	0.162	0.222		0.233
Liquid K, W/m/°C	0.054	0.054	0.091	0.105		0.111
Liquid Spec Heat, kJ/kg/°C	2.932	2.932	2.593	2.451		2.400
Surface Tension, dyne/cm	5		11			
Liquid Vpr Press, Bar (a)		11.11				1.01
Vapor Density, kg/m³	29.29		8.18		7.65	
Vapor Viscosity, cP	0.011		0.009		0.009	
Vapor K, W/m/°C	0.031		0.023		0.022	
Vapor Spec Heat, kJ/kg/°C	2.405		2.045		2.016	
Vapor Mol Wt	0.0		83.8		80.8	
Enthalpy, kJ/kg	498.9	419.7	419.7	212.0	530.4	79.8
Enthalpy, MW	12.5	1.5	1.5	0.8	4.0	0.6
END-OF-RUN						
Flow Mass, kg/hr	80992	10798	10798	17263	25430	25430
Flow Molar, kg-moles/hr	973	127	127	163	315	315
Flow Standard, Nm³/hr					7060.4	
Flow Standard, m³/hr @15.6°		15.7		23.1		38.0
Flow Condition, m³/hr					3324.7	
Flow Condition, m³/hr		21.7		26.0		40.1
Temperature, °C	175	175	110	105	101	50
Pseudo Crit Temp, °C		237		295	226	226
Pressure, Bar (g)	10.1	10.1	1.9	1.9	1.7	1.4
Pseudo Crit Pres, Bar (a)		32.2		29.9	33	32.8
Wt % Vaporized	29.0	0.0	56.6	0.0	100.0	0.0
Liquid Deg API		74.8		57.9		79.7
Liquid Density, kg/m³	497.4	497.4	599.1	665.1		634.8
Liquid Viscosity, cP	0.087	0.087	0.160	0.224		0.234
Liquid K, W/m/°C	0.053	0.053	0.091	0.105		0.111
Liquid Spec Heat, kJ/kg/°C	2.929	2.929	2.593	2.435		2.396
Surface Tension, dyne/cm	5		11			
Liquid Vpr Press, Bar (a)		11.11				1.00
Vapor Density, kg/m³	29.15		8.14		7.65	
Vapor Viscosity, cP	0.011		0.009		0.009	
Vapor K, W/m/°C	0.030		0.022		0.022	
Vapor Spec Heat, kJ/kg/°C	2.393		2.030		2.013	
Vapor Mol Wt	80.3		81.9		80.7	
Enthalpy, kJ/kg	482.3	406.4	406.4	200.6	530.4	79.6
Enthalpy, MW	10.8	1.2	1.2	1.0	3.7	0.6

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	422	423	424	425	426	427
From	11-EA-301	11-V-302	11-P-301A/B	11-P-301A/B	11-P-301A/B	11-P-301A/B
To	11-V-302	11-P-301A/B	11-C-302	11-C-302	11-C-302	11-E-304
Content	SPLITTER OVHD	LT NAPHTHA	LT NAPHTHA	REFLUX	REFLUX	LT NAPHTHA
START-OF-RUN						
Flow Mass, kg/hr	27138	27138	27138	17889	17889	9248
Flow Molar, kg-moles/hr	336	336	336	221	221	114
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	40.6	40.6	40.6	26.7	26.7	13.8
Flow Condition, m³/hr						
Flow Condition, m³/hr	42.8	42.8	42.8	28.2	28.2	14.6
Temperature, °C	50	50	50	50	50	50
Pseudo Crit Temp, °C	226	226	226	226	226	226
Pressure, Bar (g)	1.0	1.0	5.8	5.8	2.1	5.5
Pseudo Crit Pres, Bar (a)	32.7	32.7	32.7	32.7	32.7	32.7
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	80.1	80.1	80.1	80.1	80.1	80.1
Liquid Density, kg/m³	633.7	633.7	634.4	634.4	633.6	634.3
Liquid Viscosity, cP	0.233	0.233	0.234	0.234	0.233	0.234
Liquid K, W/m/°C	0.111	0.111	0.111	0.111	0.111	0.111
Liquid Spec Heat, kJ/kg/°C	2.400	2.400	2.401	2.401	2.401	2.401
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		1.01		1.01		
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	79.8	79.8	80.5	80.5	80.5	80.5
Enthalpy, MW	0.6	0.6	0.6	0.4	0.4	0.2
END-OF-RUN						
Flow Mass, kg/hr	25430	25429	25429	15553	15553	9879
Flow Molar, kg-moles/hr	315	314	314	193	193	121
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	38.0	38.0	38.0	23.2	23.2	14.7
Flow Condition, m³/hr						
Flow Condition, m³/hr	40.1	40.1	40.0	24.5	24.5	15.5
Temperature, °C	50	50	50	50	50	50
Pseudo Crit Temp, °C	226	226	226	226	226	226
Pressure, Bar (g)	1.0	1.0	5.8	5.8	2.1	5.5
Pseudo Crit Pres, Bar (a)	32.8	32.8	32.8	32.8	32.8	32.8
Wt % Vaporized	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Deg API	79.7	79.7	79.7	79.7	79.7	79.7
Liquid Density, kg/m³	634.7	634.7	635.4	635.4	634.6	635.3
Liquid Viscosity, cP	0.234	0.234	0.234	0.234	0.233	0.234
Liquid K, W/m/°C	0.111	0.111	0.111	0.111	0.111	0.111
Liquid Spec Heat, kJ/kg/°C	2.396	2.396	2.397	2.397	2.397	2.397
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)		1.00		1.00		
Vapor Density, kg/m³						
Vapor Viscosity, cP						
Vapor K, W/m/°C						
Vapor Spec Heat, kJ/kg/°C						
Vapor Mol Wt						
Enthalpy, kJ/kg	79.6	79.6	80.4	80.4	80.4	80.4
Enthalpy, MW	0.6	0.6	0.6	0.3	0.3	0.2

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	428	429	430	431	432	433
From	11-E-304	11-E-304	1-C-302	11-E-305	11-C-302	11-P-302A/B
To	GASO BLEND	GASO BLEND	11-E-305	11-C-302	11-P-302A/B	11-E-306
Content	LT NAPHTHA	LT NAPHTHA	HVY NAPHTHA	HVY NAPHTHA	HVY NAPHTHA	HVY NAPHTHA
START-OF-RUN						
Flow Mass, kg/hr	9248	9248	115382	115382	17565	17565
Flow Molar, kg-moles/hr	114	114	1088	1088	163	163
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	13.8	13.8	153.7		23.3	23.3
Flow Condition, m³/hr						
Flow Condition, m³/hr	14.3	14.3	187.9		28.6	28.5
Temperature, °C	38	38	157	161	161	161
Pseudo Crit Temp, °C	226	226	297		300	300
Pressure, Bar (g)	4.8	3.5	2.0	2.0	2.0	10.2
Pseudo Crit Pres, Bar (a)	32.7	32.7	29.7		29.4	29.4
Wt % Vaporized	0.0	0.0	0.0	29.0	0.0	0.0
Liquid Deg API	80.1	80.1	57.0		56.4	56.4
Liquid Density, kg/m³	646.6	646.4	614.2	614.3	614.3	617.4
Liquid Viscosity, cP	0.262	0.262	0.155	0.154	0.154	0.155
Liquid K, W/m/°C	0.116	0.116	0.093	0.093	0.093	0.093
Liquid Spec Heat, kJ/kg/°C	2.341	2.341	2.653	2.662	2.662	2.664
Surface Tension, dyne/cm				10		
Liquid Vpr Press, Bar (a)	0.66				3.01	
Vapor Density, kg/m³				9.25		
Vapor Viscosity, cP				0.010		
Vapor K, W/m/°C				0.024		
Vapor Spec Heat, kJ/kg/°C				2.094		
Vapor Mol Wt				102.4		
Enthalpy, kJ/kg	50.8	50.8	331.9	423.4	339.5	340.8
Enthalpy, MW	0.1	0.1	10.6	13.6	1.7	1.7
END-OF-RUN						
Flow Mass, kg/hr	9879	9879	115059	115059	18184	18184
Flow Molar, kg-moles/hr	121	121	1087	1087	169	169
Flow Standard, Nm³/hr						
Flow Standard, m³/hr @15.6°	14.7	14.7	153.0		24.1	24.1
Flow Condition, m³/hr						
Flow Condition, m³/hr	15.3	15.3	186.9		29.5	29.4
Temperature, °C	38	38	157	160	160	161
Pseudo Crit Temp, °C	226	226	297		301	301
Pressure, Bar (g)	4.8	3.5	2.0	2.0	2.0	10.2
Pseudo Crit Pres, Bar (a)	32.8	32.8	29.8		29.5	29.5
Wt % Vaporized	0.0	0.0	0.0	29.0	0.0	0.0
Liquid Deg API	79.7	79.7	56.7		56.1	56.1
Liquid Density, kg/m³	647.6	647.4	615.6	615.7	615.7	618.8
Liquid Viscosity, cP	0.263	0.263	0.155	0.155	0.155	0.156
Liquid K, W/m/°C	0.116	0.116	0.093	0.093	0.093	0.093
Liquid Spec Heat, kJ/kg/°C	2.338	2.338	2.647	2.655	2.655	2.657
Surface Tension, dyne/cm				10		
Liquid Vpr Press, Bar (a)	0.66				3.01	
Vapor Density, kg/m³				9.23		
Vapor Viscosity, cP				0.010		
Vapor K, W/m/°C				0.024		
Vapor Spec Heat, kJ/kg/°C				2.088		
Vapor Mol Wt				102.2		
Enthalpy, kJ/kg	50.7	50.7	330.8	422.6	338.5	339.8
Enthalpy, MW	0.1	0.1	10.6	13.5	1.7	1.7

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	434	435	436	437
From	11-E-306	11-EA-302	11-EA-302	11-EA-302
To	11-EA-302	11-E-307	RUNDOWN	RUNDOWN
Content	HVY NAPHTHA	HVY NAPHTHA	HVY NAPHTHA	HVY NAPHTHA
START-OF-RUN				
Flow Mass, kg/hr	17565	17565	17565	17565
Flow Molar, kg-moles/hr	163	163	163	163
Flow Standard, Nm³/hr				
Flow Standard, m³/hr @15.6°	23.3	23.3	23.3	23.3
Flow Condition, m³/hr				
Flow Condition, m³/hr	26.6	24.3	24.0	24.0
Temperature, °C	119	50	38	38
Pseudo Crit Temp, °C	300	300	300	300
Pressure, Bar (g)	9.0	7.7	7.0	5.0
Pseudo Crit Pres, Bar (a)	29.4	29.4	29.4	29.4
Wt % Vaporized	0.0	0.0	0.0	0.0
Liquid Deg API	56.4	56.4	56.4	56.4
Liquid Density, kg/m³	661.4	722.9	733.1	732.9
Liquid Viscosity, cP	0.211	0.393	0.455	0.454
Liquid K, W/m/°C	0.104	0.119	0.121	0.121
Liquid Spec Heat, kJ/kg/°C	2.477	2.176	2.122	2.122
Surface Tension, dyne/cm				
Liquid Vpr Press, Bar (a)			0.04	
Vapor Density, kg/m³				
Vapor Viscosity, cP				
Vapor K, W/m/°C				
Vapor Spec Heat, kJ/kg/°C				
Vapor Mol Wt				
Enthalpy, kJ/kg	231.6	72.3	46.0	46.0
Enthalpy, MW	1.1	0.4	0.2	0.2
END-OF-RUN				
Flow Mass, kg/hr	18184	18184	18184	18184
Flow Molar, kg-moles/hr	169	169	169	169
Flow Standard, Nm³/hr				
Flow Standard, m³/hr @15.6°	24.1	24.1	24.1	24.1
Flow Condition, m³/hr				
Flow Condition, m³/hr	27.2	25.1	24.8	24.8
Temperature, °C	114	50	38	38
Pseudo Crit Temp, °C	301	301	301	301
Pressure, Bar (g)	9.0	7.7	7.0	5.0
Pseudo Crit Pres, Bar (a)	29.5	29.5	29.5	29.5
Wt % Vaporized	0.0	0.0	0.0	0.0
Liquid Deg API	56.1	56.1	56.1	56.1
Liquid Density, kg/m³	667.5	724.3	734.5	734.3
Liquid Viscosity, cP	0.221	0.395	0.458	0.457
Liquid K, W/m/°C	0.105	0.118	0.121	0.121
Liquid Spec Heat, kJ/kg/°C	2.450	2.171	2.117	2.117
Surface Tension, dyne/cm				
Liquid Vpr Press, Bar (a)			0.04	
Vapor Density, kg/m³				
Vapor Viscosity, cP				
Vapor K, W/m/°C				
Vapor Spec Heat, kJ/kg/°C				
Vapor Mol Wt				
Enthalpy, kJ/kg	219.1	72.1	45.9	45.9
Enthalpy, MW	1.1	0.4	0.2	0.2

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

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Stream No	501	502	503	504	505	506
From	H2 GENERATION	H2 GENERATION	11-V-401	11-V-401	11-K-401B 1ST	11-EA-401B
To	11-V-401	11-V-401	11-K-401B	11-K-401B 1ST	11-EA401B	11-V-402B
Content	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN
START-OF-RUN						
Flow Mass, kg/hr	3736	4296	4296	4296	4296	4296
Flow Molar, kg-moles/hr	1791	2059	2059	2059	2059	2059
Flow Standard, Nm³/hr	40143.5	46150.4	46150.4	46150.4	46150.4	46150.4
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr	1624.2	1867.7	1867.7	1890.0	1289.4	1100.5
Flow Condition, m³/hr						
Temperature, °C	38	39	39	39	111	50
Pseudo Crit Temp, °C	-239	-239	-239	-239	-239	-239
Pressure, Bar (g)	28.0	28.0	28.0	27.7	51.1	50.8
Pseudo Crit Pres, Bar (a)	13	13	13	13	13	13
Wt % Vaporized	100.0	100.0	100.0	100.0	100.0	100.0
Liquid Deg API						
Liquid Density, kg/m³						
Liquid Viscosity, cP						
Liquid K, W/m/°C						
Liquid Spec Heat, kJ/kg/°C						
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	2.30	2.30	2.30	2.27	3.33	3.90
Vapor Viscosity, cP	0.009	0.009	0.009	0.009	0.010	0.009
Vapor K, W/m/°C	0.196	0.196	0.196	0.196	0.236	0.205
Vapor Spec Heat, kJ/kg/°C	14.015	14.015	14.015	14.014	14.032	14.045
Vapor Mol Wt	2.1	2.1	2.1	2.1	2.1	2.1
Enthalpy, kJ/kg	335.1	357.3	357.3	357.3	1376.3	519.0
Enthalpy, MW	0.3	0.4	0.4	0.4	1.6	0.6
END-OF-RUN						
Flow Mass, kg/hr	3658	4206	4206	4206	4206	4206
Flow Molar, kg-moles/hr	1754	2016	2016	2016	2016	2016
Flow Standard, Nm³/hr	39314.2	45186.6	45186.6	45186.6	45186.6	45186.6
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr	1590.3	1828.5	1828.5	1850.4	1258.2	1072.6
Flow Condition, m³/hr						
Temperature, °C	38	39	39	39	111	50
Pseudo Crit Temp, °C	-239	-239	-239	-239	-239	-239
Pressure, Bar (g)	28.0	28.0	28.0	27.7	51.4	51.0
Pseudo Crit Pres, Bar (a)	13	13	13	13	13	13
Wt % Vaporized	100.0	100.0	100.0	100.0	100.0	100.0
Liquid Deg API						
Liquid Density, kg/m³						
Liquid Viscosity, cP						
Liquid K, W/m/°C						
Liquid Spec Heat, kJ/kg/°C						
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	2.30	2.30	2.30	2.27	3.34	3.92
Vapor Viscosity, cP	0.009	0.009	0.009	0.009	0.011	0.009
Vapor K, W/m/°C	0.196	0.196	0.196	0.196	0.236	0.205
Vapor Spec Heat, kJ/kg/°C	14.015	14.015	14.015	14.014	14.032	14.046
Vapor Mol Wt	2.1	2.1	2.1	2.1	2.1	2.1
Enthalpy, kJ/kg	335.1	357.3	357.3	357.3	1376.5	519.1
Enthalpy, MW	0.3	0.4	0.4	0.4	1.6	0.6

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
MAKE-UP COMPRESSION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	507	508	509	510	511	512
From	11-V-402B	11-K-401B 2ND	11-EA-402B	11-V-403B	11-K-401B 3RD	11-K-401B 3RD
To	11-K-401B 2ND	11-EA-402B	11-V-403B	11-K-401B 3RD	11-E-107	11-E-107
Content	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN
START-OF-RUN						
Flow Mass, kg/hr	4296	4296	4296	4296	4296	4296
Flow Molar, kg-moles/hr	2059	2059	2059	2059	2059	2059
Flow Standard, Nm³/hr	46150.4	46150.4	46150.4	46150.4	46150.4	46150.4
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr	1103.7	757.8	623.8	624.7	434.9	435.7
Flow Condition, m³/hr						
Temperature, °C	50	124	50	50	124	124
Pseudo Crit Temp, °C	-239	-239	-239	-239	-239	-239
Pressure, Bar (g)	50.6	93.0	92.6	92.5	169.1	168.7
Pseudo Crit Pres, Bar (a)	13	13	13	13	13	13
Wt % Vaporized	100.0	100.0	100.0	100.0	100.0	100.0
Liquid Deg API						
Liquid Density, kg/m³						
Liquid Viscosity, cP						
Liquid K, W/m/°C						
Liquid Spec Heat, kJ/kg/°C						
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	3.89	5.67	6.89	6.88	9.88	9.86
Vapor Viscosity, cP	0.009	0.011	0.010	0.010	0.011	0.011
Vapor K, W/m/°C	0.205	0.247	0.209	0.209	0.253	0.253
Vapor Spec Heat, kJ/kg/°C	14.045	14.066	14.098	14.098	14.115	14.115
Vapor Mol Wt	2.1	2.1	2.1	2.1	2.1	2.1
Enthalpy, kJ/kg	519.0	1585.7	543.2	543.2	1643.8	1643.8
Enthalpy, MW	0.6	1.9	0.6	0.6	2.0	2.0
END-OF-RUN						
Flow Mass, kg/hr	4206	4206	4206	4206	4206	4206
Flow Molar, kg-moles/hr	2016	2016	2016	2016	2016	2016
Flow Standard, Nm³/hr	45186.6	45186.6	45186.6	45186.6	45186.6	45186.6
Flow Standard, m³/hr @15.6°						
Flow Condition, m³/hr	1075.7	736.3	605.3	606.1	420.8	421.6
Flow Condition, m³/hr						
Temperature, °C	50	125	50	50	125	125
Pseudo Crit Temp, °C	-239	-239	-239	-239	-239	-239
Pressure, Bar (g)	50.9	93.8	93.5	93.4	171.5	171.1
Pseudo Crit Pres, Bar (a)	13	13	13	13	13	13
Wt % Vaporized	100.0	100.0	100.0	100.0	100.0	100.0
Liquid Deg API						
Liquid Density, kg/m³						
Liquid Viscosity, cP						
Liquid K, W/m/°C						
Liquid Spec Heat, kJ/kg/°C						
Surface Tension, dyne/cm						
Liquid Vpr Press, Bar (a)						
Vapor Density, kg/m³	3.91	5.71	6.95	6.94	10.00	9.98
Vapor Viscosity, cP	0.009	0.011	0.010	0.010	0.011	0.011
Vapor K, W/m/°C	0.205	0.248	0.209	0.209	0.253	0.253
Vapor Spec Heat, kJ/kg/°C	14.045	14.066	14.100	14.099	14.116	14.116
Vapor Mol Wt	2.1	2.1	2.1	2.1	2.1	2.1
Enthalpy, kJ/kg	519.1	1593.9	543.7	543.7	1653.1	1653.1
Enthalpy, MW	0.6	1.9	0.6	0.6	1.9	1.9

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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STREAM DATA SHEETS
MAKE-UP COMPRESSION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	513	514	515	516
From	11-K-401B 3RD	11-K-401B 3RD	11-K-401B 3RD	11-EA-403
To	11-E-107	11-EA-403	11-EA-403	11-V-401
Content	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN
START-OF-RUN				
Flow Mass, kg/hr	3736	561	561	561
Flow Molar, kg-moles/hr	1791	268	268	268
Flow Standard, Nm³/hr	40143.5	6007.0	6007.0	6007.0
Flow Standard, m³/hr @15.6°				
Flow Condition, m³/hr	378.9	56.9	305.3	253.8
Flow Condition, m³/hr				
Temperature, °C	124	124	131	50
Pseudo Crit Temp, °C	-239	-239	-239	-239
Pressure, Bar (g)	168.7	168.7	29.0	28.0
Pseudo Crit Pres, Bar (a)	13	13	13	13
Wt % Vaporized	100.0	100.0	100.0	100.0
Liquid Deg API				
Liquid Density, kg/m³				
Liquid Viscosity, cP				
Liquid K, W/m/°C				
Liquid Spec Heat, kJ/kg/°C				
Surface Tension, dyne/cm				
Liquid Vpr Press, Bar (a)				
Vapor Density, kg/m³	9.86	9.86	1.84	2.21
Vapor Viscosity, cP	0.011	0.011	0.011	0.009
Vapor K, W/m/°C	0.253	0.253	0.245	0.202
Vapor Spec Heat, kJ/kg/°C	14.115	14.115	14.013	14.015
Vapor Mol Wt	2.1	2.1	2.1	2.1
Enthalpy, kJ/kg	1643.8	1643.8	1643.8	506.3
Enthalpy, MW	1.7	0.3	0.3	0.1
END-OF-RUN				
Flow Mass, kg/hr	3658	549	549	549
Flow Molar, kg-moles/hr	1754	263	263	263
Flow Standard, Nm³/hr	39314.2	5894.9	5894.9	5894.9
Flow Standard, m³/hr @15.6°				
Flow Condition, m³/hr	366.7	55.0	299.3	248.4
Flow Condition, m³/hr				
Temperature, °C	125	125	132	50
Pseudo Crit Temp, °C	-239	-239	-239	-239
Pressure, Bar (g)	171.1	171.1	29.0	28.0
Pseudo Crit Pres, Bar (a)	13	13	13	13
Wt % Vaporized	100.0	100.0	100.0	100.0
Liquid Deg API				
Liquid Density, kg/m³				
Liquid Viscosity, cP				
Liquid K, W/m/°C				
Liquid Spec Heat, kJ/kg/°C				
Surface Tension, dyne/cm				
Liquid Vpr Press, Bar (a)				
Vapor Density, kg/m³	9.98	9.98	1.83	2.21
Vapor Viscosity, cP	0.011	0.011	0.011	0.009
Vapor K, W/m/°C	0.253	0.253	0.245	0.202
Vapor Spec Heat, kJ/kg/°C	14.116	14.116	14.013	14.015
Vapor Mol Wt	2.1	2.1	2.1	2.1
Enthalpy, kJ/kg	1653.1	1653.1	1653.1	506.3
Enthalpy, MW	1.7	0.3	0.3	0.1

*Datum H2O and HC Above 15.6°C Liquid H2 Above 15.6°C Vapor

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date:	Rev:
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COMPONENT SUMMARY
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	101	102	103	104	105	106
From	VDU	VDU	11-E-101	11-E-102A-B	11-FT-101	11-V-101
To	11-E-101	11-E-101	11-E-102A-B	11-FT-101	11-V-101	11-P-101A/B
Content	HVGO	HVGO	HVGO	HVGO	HVGO	HVGO
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	0	0	0
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	121869	121869	121869	121869	121869	121869
Total Mass Flow, kg/hr	121869	121869	121869	121869	121869	121869
Total Molar Flow, kg-moles/hr	273	273	273	273	273	273
Tot Liq Std Flow, m³/h	132.2	132.2	132.2	132.2	132.2	132.2
Total Vap. Std. Flow, Nm³/hr						

END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	0	0	0
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	121869	121869	121869	121869	121869	121869
Total Mass Flow, kg/hr	121869	121869	121869	121869	121869	121869
Total Molar Flow, kg-moles/hr	273	273	273	273	273	273
Tot Liq Std Flow, m³/h	132.2	132.2	132.2	132.2	132.2	132.2
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	107	108	109	110	111	112
From	11-P-101A/B	11-P-101A/B	11-P-101A/B	11-E-103A-B	11-E-103A-B	11-F-101
To	11-E-103A-B	11-E-103A-B	11-E-103A-B	11-F-101	11-F-101	11-R-101
Content	HVGO	HVGO	HVGO	HVGO	HVGO	HVGO
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	9573	9573	9573	9573
H2S	0	0	3	3	3	3
NH3	0	0	0	0	0	0
H2O	0	0	88	88	88	88
C1	0	0	2318	2318	2318	2318
C2	0	0	554	554	554	554
C3	0	0	994	994	994	994
iC4	0	0	1097	1097	1097	1097
nC4	0	0	519	519	519	519
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	852	852	852	852
HEAVY NAPHTHA	0	0	264	264	264	264
KEROSENE	0	0	22	22	22	22
DIESEL	0	0	1	1	1	1
UCO	0	0	0	0	0	0
FEED	121869	121869	121869	121869	121869	121869
Total Mass Flow, kg/hr	121869	121869	138154	138154	138154	138154
Total Molar Flow, kg-moles/hr	273	273	5256	5256	5256	5256
Tot Liq Std Flow, m³/h	132.2	132.2				
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	9423	9423	9423	9423
H2S	0	0	3	3	3	3
NH3	0	0	0	0	0	0
H2O	0	0	88	88	88	88
C1	0	0	3224	3224	3224	3224
C2	0	0	986	986	986	986
C3	0	0	1098	1098	1098	1098
iC4	0	0	1145	1145	1145	1145
nC4	0	0	541	541	541	541
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	872	872	872	872
HEAVY NAPHTHA	0	0	261	261	261	261
KEROSENE	0	0	20	20	20	20
DIESEL	0	0	1	1	1	1
UCO	0	0	0	0	0	0
FEED	121869	121869	121869	121869	121869	121869
Total Mass Flow, kg/hr	121869	121869	139531	139531	139531	139531
Total Molar Flow, kg-moles/hr	273	273	5255	5255	5255	5255
Tot Liq Std Flow, m³/h	132.2	132.2				
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

Stream No	113	114	115	116	117	118
From	11-F-101	11-R-101	11-E-103A-B	11-E-103A-B	11-E-105	11-E-106
To	11-R-101	11-E-103A-B	11-E-105	11-E-105	11-E-106	11-V-103
Content	HVGO	1ST STG EFFL	1ST STG EFFL	REACTOR EFFL	REACTOR EFFL	RX EFFL
START-OF-RUN						
COMPONENT, kg/hr						
H2	9573	14757	14756	22372	22372	22372
H2S	3	1041	1041	1045	1045	1045
NH3	0	340	340	340	340	340
H2O	88	177	177	255	255	255
C1	2318	4708	4710	6757	6757	6757
C2	554	1289	1290	1803	1803	1803
C3	994	2482	2483	3671	3671	3671
iC4	1097	2970	2971	4928	4928	4928
nC4	519	1670	1670	2597	2597	2597
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	852	5150	5151	12028	12028	12028
HEAVY NAPHTHA	264	9984	9984	18332	18332	18332
KEROSENE	22	11815	11815	21656	21656	21656
DIESEL	1	41529	41529	68463	68463	68463
UCO	0	54676	54676	88046	88046	88046
FEED	121869	0	0	0	0	0
Total Mass Flow, kg/hr	138154	152588	152593	252293	252293	252293
Total Molar Flow, kg-moles/hr	5256	8390	8390	12809	12809	12809
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	9423	13705	13705	21252	21252	21252
H2S	3	1041	1041	1044	1044	1044
NH3	0	340	340	340	340	340
H2O	88	168	168	247	247	247
C1	3224	6276	6275	9163	9163	9163
C2	986	2182	2182	3111	3111	3111
C3	1098	2610	2610	3963	3963	3963
iC4	1145	2978	2978	5092	5092	5092
nC4	541	1712	1711	2692	2692	2692
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	872	5453	5453	12662	12662	12662
HEAVY NAPHTHA	261	10471	10471	18912	18912	18912
KEROSENE	20	11738	11738	21516	21516	21516
DIESEL	1	40102	40102	66599	66599	66599
UCO	0	54803	54803	88337	88337	88337
FEED	121869	0	0	0	0	0
Total Mass Flow, kg/hr	139531	153579	153577	254930	254930	254930
Total Molar Flow, kg-moles/hr	5255	8004	8004	12463	12463	12463
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

Stream No	119	120	121	122	123	124
From	11-E-305	11-V-102	11-P-102A/B	11-P-102A/B	11-P-102A/B	11-E-104A-B
To	11-V-102	11-P-102A/B	11-E-104A-B	11-E-104A-B	11-E-104A-B	11-F-102
Content	2ND STG FEED	2ND STG FEED	2ND STG FEED	2ND STG FEED	2ND STG FEED	2ND STG FEED
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	7340	7340
H2S	0	0	0	0	2	2
NH3	0	0	0	0	0	0
H2O	0	0	0	0	68	68
C1	0	0	0	0	1777	1777
C2	0	0	0	0	425	425
C3	0	0	0	0	762	762
iC4	0	0	0	0	841	841
nC4	0	0	0	0	398	398
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	654	654
HEAVY NAPHTHA	0	0	0	0	203	203
KEROSENE	0	0	0	0	17	17
DIESEL	0	0	0	0	0	0
UCO	85604	85604	85604	85604	85604	85604
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	85604	85604	85604	85604	98091	98091
Total Molar Flow, kg-moles/hr	199	199	199	199	4018	4018
Tot Liq Std Flow, m³/h	101.4	101.4	101.4	101.4		
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	7224	7224
H2S	0	0	0	0	2	2
NH3	0	0	0	0	0	0
H2O	0	0	0	0	68	68
C1	0	0	0	0	2471	2471
C2	0	0	0	0	756	756
C3	0	0	0	0	841	841
iC4	0	0	0	0	878	878
nC4	0	0	0	0	415	415
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	668	668
HEAVY NAPHTHA	0	0	0	0	200	200
KEROSENE	0	0	0	0	16	16
DIESEL	0	0	0	0	0	0
UCO	85895	85895	85895	85895	85895	85895
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	85895	85895	85895	85895	99434	99434
Total Molar Flow, kg-moles/hr	200	200	200	200	4018	4018
Tot Liq Std Flow, m³/h	101.5	101.5	101.5	101.5		
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

COMPONENT SUMMARY
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	125	126	127	128	129	130
From	11-E-104A-B	11-F-102	11-F-102	11-R-102	11-E-104A-B	11-K-101
To	11-F-102	11-R-102	11-R-102	11-E-104A-B	11-E-105	11-R-101
Content	2DN STG FEED	2ND STG FEED	2ND STG FEED	2ND STG EFFL	2ND STG EFFL	RECYCLE GAS
START-OF-RUN						
COMPONENT, kg/hr						
H2	7340	7340	7340	7615	7615	7684
H2S	2	2	2	3	3	3
NH3	0	0	0	0	0	0
H2O	68	68	68	77	77	89
C1	1777	1777	1777	2046	2046	2280
C2	425	425	425	513	513	565
C3	762	762	762	1188	1187	1013
iC4	841	841	841	1957	1957	1118
nC4	398	398	398	927	927	529
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	654	654	654	6877	6877	869
HEAVY NAPHTHA	203	203	203	8348	8348	269
KEROSENE	17	17	17	9841	9841	22
DIESEL	0	0	0	26934	26934	1
UCO	85604	85604	85604	33370	33370	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	98091	98091	98091	99696	99695	14442
Total Molar Flow, kg-moles/hr	4018	4018	4018	4415	4415	4043
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr						90619.8
END-OF-RUN						
COMPONENT, kg/hr						
H2	7224	7224	7224	7547	7546	6694
H2S	2	2	2	3	3	3
NH3	0	0	0	0	0	0
H2O	68	68	68	78	78	79
C1	2471	2471	2471	2890	2890	2832
C2	756	756	756	930	930	888
C3	841	841	841	1354	1354	989
iC4	878	878	878	2114	2114	1031
nC4	415	415	415	981	981	487
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	668	668	668	7209	7210	785
HEAVY NAPHTHA	200	200	200	8442	8442	235
KEROSENE	16	16	16	9778	9778	19
DIESEL	0	0	0	26496	26496	1
UCO	85895	85895	85895	33534	33534	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	99434	99434	99434	101356	101356	14043
Total Molar Flow, kg moloc/hr	4018	4018	4018	4459	4459	3590
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr						80466.3

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

Stream No	131	132	133	135	136	137
From	11-K-101	11-K-101	11-K-101	11-K-101	11-E-107	11-E-107
To	11-R-102	11-R-102	11-E-107	11-E-107	11-E-103A-B	11-E-103A-B
Content	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS
START-OF-RUN						
COMPONENT, kg/hr						
H2	14172	851	13321	16913	16913	9573
H2S	5	0	5	5	5	3
NH3	0	0	0	0	0	0
H2O	165	10	155	155	155	88
C1	4205	253	3953	4096	4096	2318
C2	1041	63	979	979	979	554
C3	1869	112	1757	1757	1757	994
iC4	2062	124	1938	1938	1938	1097
nC4	976	59	918	918	918	519
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	1602	96	1506	1506	1506	852
HEAVY NAPHTHA	497	30	467	467	467	264
KEROSENE	41	2	39	39	39	22
DIESEL	1	0	1	1	1	1
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	26636	1600	25039	28774	28774	16285
Total Molar Flow, kg-moles/hr	7454	447	7009	8800	8800	4983
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr	167074.0	10019.1	157099.7	197243.2	197243.2	111689.0

END-OF-RUN						
COMPONENT, kg/hr						
H2	14045	915	13130	16647	16647	9423
H2S	5	0	5	5	5	3
NH3	0	0	0	0	0	0
H2O	167	11	156	156	156	88
C1	5942	387	5555	5695	5695	3224
C2	1864	122	1742	1742	1742	986
C3	2075	135	1940	1940	1940	1098
iC4	2165	141	2023	2023	2023	1145
nC4	1022	67	956	956	956	541
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	1647	108	1540	1540	1540	872
HEAVY NAPHTHA	493	32	461	461	461	261
KEROSENE	39	3	36	36	36	20
DIESEL	1	0	1	1	1	1
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	29465	1921	27545	31202	31202	17662
Total Molar Flow, kg-moles/hr	7537	489	7046	8799	8799	4982
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr	168934.3	10960.4	157929.0	197220.8	197220.8	111666.5

Material Balance reflects a 0.1% convergence of the process

COMPONENT SUMMARY
REACTION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	138	139	140
From	11-E-107	11-E-107	11-E-107
To	11-E-103A-B	11-E-104A-B	11-E-104A-B
Content	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS
START-OF-RUN			
COMPONENT, kg/hr			
H2	9573	7340	7340
H2S	3	2	2
NH3	0	0	0
H2O	88	68	68
C1	2318	1778	1778
C2	554	425	425
C3	994	762	762
iC4	1097	841	841
nC4	519	398	398
DEA	0	0	0
LIGHT NAPHTHA	852	654	654
HEAVY NAPHTHA	264	203	203
KEROSENE	22	17	17
DIESEL	1	0	0
UCO	0	0	0
FEED	0	0	0
Total Mass Flow, kg/hr	16285	12488	12488
Total Molar Flow, kg-moles/hr	4983	3819	3819
Tot Liq Std Flow, m³/h			
Total Vap. Std. Flow, Nm³/hr	111689.0	85599.1	85599.1
END-OF-RUN			
COMPONENT, kg/hr			
H2	9423	7224	7224
H2S	3	2	2
NH3	0	0	0
H2O	88	68	68
C1	3224	2472	2472
C2	986	756	756
C3	1098	842	842
iC4	1145	878	878
nC4	541	415	415
DEA	0	0	0
LIGHT NAPHTHA	872	669	669
HEAVY NAPHTHA	261	200	200
KEROSENE	20	16	16
DIESEL	1	0	0
UCO	0	0	0
FEED	0	0	0
Total Mass Flow, kg/hr	17662	13542	13542
Total Molar Flow, kg-moles/hr	4982	3818	3818
Tot Liq Std Flow, m³/h			
Total Vap. Std. Flow, Nm³/hr	111666.5	85576.7	85576.7

Material Balance reflects a 0.1% convergence of the process

COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	201	203	204	205	206	207
From	11-V-103	11-E-107	11-E-107	11-EA-101	11-V-103	11-V-103
To	11-E-107	11-EA-101	11-EA-101	11-V-104	11-V-105	11-V-105
Content	HHPS VAPOR	HHPS VAPOR	HHPS VAPOR	HHPS VAPOR	HHPS LIQ	RX EFFL
START-OF-RUN						
COMPONENT, kg/hr						
H2	22015	22015	22015	22015	357	357
H2S	994	994	994	994	51	51
NH3	327	327	327	327	13	13
H2O	242	242	7739	7739	13	13
C1	6590	6590	6590	6590	167	167
C2	1705	1705	1705	1705	98	98
C3	3382	3382	3382	3382	290	290
iC4	4400	4400	4400	4400	528	528
nC4	2293	2293	2293	2293	304	304
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	9605	9605	9605	9605	2423	2423
HEAVY NAPHTHA	11885	11885	11885	11885	6446	6446
KEROSENE	8254	8254	8254	8254	13402	13402
DIESEL	4991	4991	4991	4991	63472	63472
UCO	59	59	59	59	87986	87986
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	76742	76742	84239	84239	175550	175550
Total Molar Flow, kg-moles/hr	11953	11953	12369	12369	854	854
Tot Liq Std Flow, m³/h					217.8	
Total Vap. Std. Flow, Nm³/hr	267914.5					

END-OF-RUN						
COMPONENT, kg/hr						
H2	20900	20900	20900	20900	352	352
H2S	991	991	992	992	53	53
NH3	327	327	327	327	13	13
H2O	234	234	8128	8128	13	13
C1	8928	8928	8928	8928	236	236
C2	2936	2936	2936	2936	175	175
C3	3639	3639	3639	3639	325	325
iC4	4526	4526	4526	4526	566	566
nC4	2365	2365	2365	2365	327	327
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	10022	10022	10022	10022	2640	2640
HEAVY NAPHTHA	12070	12070	12070	12070	6842	6842
KEROSENE	7979	7979	7979	7979	13536	13536
DIESEL	4675	4675	4675	4675	61924	61924
UCO	57	57	57	57	88280	88280
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	79649	79649	87544	87544	175282	175282
Total Molar Flow, kg-moles/hr	11599	11599	12037	12037	866	866
Tot Liq Std Flow, m³/h					217.2	
Total Vap. Std. Flow, Nm³/hr	259980.0					

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	208	209	210	211	212	213
From	OFFPLOT	OFFPLOT	OFFPLOT	11-V-108	11-P-103A/B	11-P-103A/B
To	11-V-108	11-V-108	11-V-108	11-P-103A/B	11-EA-101	11-EA-101
Content	SOUR WATER	SOUR WATER	SOUR WATER	INJ WATER	INJ WATER	INJ WATER
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	204	204	7497	7497	7497	7497
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	204	204	7497	7497	7497	7497
Total Molar Flow, kg-moles/hr	11	11	416	416	416	416
Tot Liq Std Flow, m³/h	0.2	0.2	7.5	7.5	7.5	7.5
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	613	613	7894	7894	7894	7894
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	613	613	7894	7894	7894	7894
Total Molar Flow, kg-moles/hr	34	34	438	438	438	438
Tot Liq Std Flow, m³/h	0.6	0.6	7.9	7.9	7.9	7.9
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	214	215	216	217	218	219
From	11-V-104	11-V-109	11-V-104	11-V-104	11-V-104	11-V-104
To	11-V-109	11-C-101	11-V-106	11-V-106	11-V-107	11-V-107
Content	CHPS VAPOR	CHPS VAPOR	CHPS LIQ	CHPS LIQ	SOUR WATER	SOUR WATER
START-OF-RUN						
COMPONENT, kg/hr						
H2	21948	21948	64	64	2	2
H2S	515	515	60	60	419	419
NH3	37	37	3	3	287	287
H2O	176	176	8	8	7554	7554
C1	6486	6486	103	103	1	1
C2	1607	1607	98	98	0	0
C3	2883	2883	498	498	0	0
iC4	3180	3180	1220	1220	0	0
nC4	1505	1505	787	787	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	2471	2471	7135	7135	0	0
HEAVY NAPHTHA	767	767	11119	11119	0	0
KEROSENE	63	63	8190	8190	0	0
DIESEL	2	2	4989	4989	0	0
UCO	0	0	59	59	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	41640	41640	34333	34333	8263	8263
Total Molar Flow, kg-moles/hr	11557	11557	362	362	449	449
Tot Liq Std Flow, m³/h			48.2		8.6	
Total Vap. Std. Flow, Nm³/hr	259038.6	259038.6				
END-OF-RUN						
COMPONENT, kg/hr						
H2	20831	20831	67	67	2	2
H2S	502	502	63	63	427	427
NH3	34	34	3	3	290	290
H2O	171	171	9	9	7948	7948
C1	8776	8776	151	151	1	1
C2	2752	2752	183	183	0	0
C3	3064	3064	574	574	0	0
iC4	3196	3196	1329	1329	0	0
nC4	1510	1510	855	855	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	2433	2433	7589	7589	0	0
HEAVY NAPHTHA	728	728	11342	11342	0	0
KEROSENE	57	57	7922	7922	0	0
DIESEL	2	2	4673	4673	0	0
UCO	0	0	57	57	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	44056	44056	34817	34817	8668	8668
Total Molar Flow, kg-moles/hr	11187	11187	378	378	472	472
Tot Liq Std Flow, m³/h			49.3		9.0	
Total Vap. Std. Flow, Nm³/hr	250745.4	250745.4				

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	221	222	223	224	225	226
From	11-V-105	11-EA-102	11-EA-102	11-V-105	11-V-105	11-V-105
To	11-EA-102	11-V-106	11-V-106	11-C-201	11-C-201	11-C-201
Content	HLPS VAPOR	HLPS VAPOR	HLPS VAPOR	HLPS LIQUID	HLPS LIQUID	STRIPPER FD
START-OF-RUN						
COMPONENT, kg/hr						
H2	298	298	362	59	59	72
H2S	30	30	90	20	20	76
NH3	9	9	12	4	4	10
H2O	7	7	16	5	5	12
C1	126	126	229	41	41	86
C2	54	54	152	44	44	119
C3	123	123	622	166	166	629
iC4	174	174	1393	355	355	1572
nC4	94	94	882	210	210	1006
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	430	430	7565	1993	1993	9422
HEAVY NAPHTHA	557	557	11676	5889	5889	17525
KEROSENE	376	376	8566	13027	13027	21590
DIESEL	219	219	5207	63253	63253	68460
UCO	5	5	65	87981	87981	88046
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	2502	2502	36837	173047	173047	208625
Total Molar Flow, kg-moles/hr	181	181	544	673	673	1017
Tot Liq Std Flow, m³/h				210.1		
Total Vap. Std. Flow, Nm³/hr	4056.9					

END-OF-RUN						
COMPONENT, kg/hr						
H2	295	295	362	57	57	69
H2S	32	32	95	21	21	80
NH3	9	9	12	4	4	11
H2O	8	8	16	5	5	13
C1	179	179	330	57	57	121
C2	97	97	280	78	78	216
C3	140	140	714	185	185	717
iC4	189	189	1518	377	377	1704
nC4	103	103	959	224	224	1090
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	476	476	8066	2164	2164	10087
HEAVY NAPHTHA	602	602	11944	6240	6240	18144
KEROSENE	387	387	8309	13150	13150	21456
DIESEL	218	218	4891	61706	61706	66597
UCO	5	5	63	88275	88275	88337
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	2740	2740	37559	172543	172543	208642
Total Molar Flow, kg-moles/hr	186	186	566	676	676	1035
Tot Liq Std Flow, m³/h				209.1		
Total Vap. Std. Flow, Nm³/hr	4169.0					

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	227	228	229	230	231	232
From	11-C-101	11-V-110	11-V-110	11-K-101		11-C-101
To	11-V-110	11-K-101	11-K-101	HCR RX		11-V-112
Content	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	RECYCLE GAS	EST LEAKS	RICH AMINE
START-OF-RUN						
COMPONENT, kg/hr						
H2	21944	21944	21856	21856	89	4
H2S	9	9	9	9	0	570
NH3	0	0	0	0	0	37
H2O	255	255	255	255	0	15513
C1	6485	6485	6485	6485	0	1
C2	1606	1606	1606	1606	0	0
C3	2882	2882	2882	2882	0	0
iC4	3180	3180	3180	3180	0	0
nC4	1505	1505	1505	1505	0	0
DEA	0	0	0	0	0	3898
LIGHT NAPHTHA	2471	2471	2471	2471	0	0
HEAVY NAPHTHA	767	767	767	767	0	0
KEROSENE	63	63	63	63	0	0
DIESEL	2	2	2	2	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	41169	41169	41081	41081	89	20023
Total Molar Flow, kg-moles/hr	11542	11542	11498	11498	44	919
Tot Liq Std Flow, m³/h						19.9
Total Vap. Std. Flow, Nm³/hr	258702.4	258702.4	257716.2	257716.2	986.2	
END-OF-RUN						
COMPONENT, kg/hr						
H2	20827	20827	20739	20739	89	3
H2S	8	8	8	8	0	555
NH3	0	0	0	0	0	34
H2O	247	247	247	247	0	15161
C1	8774	8774	8774	8774	0	2
C2	2752	2752	2752	2752	0	0
C3	3064	3064	3064	3064	0	0
iC4	3196	3196	3196	3196	0	0
nC4	1509	1509	1509	1509	0	0
DEA	0	0	0	0	0	3809
LIGHT NAPHTHA	2433	2433	2433	2433	0	0
HEAVY NAPHTHA	728	728	728	728	0	0
KEROSENE	57	57	57	57	0	0
DIESEL	2	2	2	2	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	43597	43597	43509	43509	89	19564
Total Molar Flow, kg-moles/hr	11172	11172	11128	11128	44	896
Tot Liq Std Flow, m³/h						19.4
Total Vap. Std. Flow, Nm³/hr	250409.2	250409.2	249423.0	249423.0	986.2	

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	233	234	235	236	237	238
From	11-C-101	11-V-106	11-V-106	11-V-106	11-V-106	11-E-110
To	11-V-112	AMINE ABS	AMINE ABS	11-E-110	11-E-110	11-E-109
Content	RICH AMINE	CLPS VAPOR	CLPS VAPOR	CLPS LIQUID	CLPS LIQUID	CLPS LIQUID
START-OF-RUN						
COMPONENT, kg/hr						
H2	4	350	350	13	13	13
H2S	570	34	34	56	56	56
NH3	37	5	5	6	6	6
H2O	15513	9	9	7	7	7
C1	1	185	185	44	44	44
C2	0	78	78	74	74	74
C3	0	160	160	462	462	462
iC4	0	177	177	1217	1217	1217
nC4	0	86	86	796	796	796
DEA	3898	0	0	0	0	0
LIGHT NAPHTHA	0	135	135	7430	7430	7430
HEAVY NAPHTHA	0	40	40	11636	11636	11636
KEROSENE	0	3	3	8563	8563	8563
DIESEL	0	0	0	5207	5207	5207
UCO	0	0	0	65	65	65
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	20023	1262	1262	35576	35576	35576
Total Molar Flow, kg-moles/hr	919	199	199	344	344	344
Tot Liq Std Flow, m³/h				49.0		
Total Vap. Std. Flow, Nm³/hr		4460.4	4460.4			

END-OF-RUN						
COMPONENT, kg/hr						
H2	3	349	349	13	13	13
H2S	555	36	36	59	59	59
NH3	34	6	6	7	7	7
H2O	15161	10	10	7	7	7
C1	2	265	265	64	64	64
C2	0	142	142	138	138	138
C3	0	183	183	532	532	532
iC4	0	191	191	1327	1327	1327
nC4	0	93	93	866	866	866
DEA	3809	0	0	0	0	0
LIGHT NAPHTHA	0	142	142	7923	7923	7923
HEAVY NAPHTHA	0	41	41	11904	11904	11904
KEROSENE	0	3	3	8306	8306	8306
DIESEL	0	0	0	4891	4891	4891
UCO	0	0	0	63	63	63
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	19564	1461	1461	36100	36100	36100
Total Molar Flow, kg-moles/hr	896	206	206	358	358	358
Tot Liq Std Flow, m³/h				50.0		
Total Vap. Std. Flow, Nm³/hr		4617.3	4617.3			

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	239	240	240A	241	242	243
From	11-E-109	AMINE REGEN	AMINE REGEN	AMINE REGEN	11-E-108	11-V-111
To	11-C-201	11-E-108	11-E-108	11-E-108	11-V-111	11-P-104A/B
Content	CLPS LIQUID	LEAN AMINE	LEAN AMINE	LEAN AMINE	LEAN AMINE	LEAN AMINE
START-OF-RUN						
COMPONENT, kg/hr						
H2	13	0	0	0	0	0
H2S	56	63	63	63	63	63
NH3	6	0	0	0	0	0
H2O	7	15591	15591	15591	15591	15591
C1	44	0	0	0	0	0
C2	74	0	0	0	0	0
C3	462	0	0	0	0	0
iC4	1217	0	0	0	0	0
nC4	796	0	0	0	0	0
DEA	0	3898	3898	3898	3898	3898
LIGHT NAPHTHA	7430	0	0	0	0	0
HEAVY NAPHTHA	11636	0	0	0	0	0
KEROSENE	8563	0	0	0	0	0
DIESEL	5207	0	0	0	0	0
UCO	65	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	35576	19552	19552	19552	19552	19552
Total Molar Flow, kg-moles/hr	344	904	904	904	904	904
Tot Liq Std Flow, m³/h		19.2	19.2	19.2	19.2	19.2
Total Vap. Std. Flow, Nm³/hr						

END-OF-RUN						
COMPONENT, kg/hr						
H2	13	0	0	0	0	0
H2S	59	62	62	62	62	62
NH3	7	0	0	0	0	0
H2O	7	15237	15237	15237	15237	15237
C1	64	0	0	0	0	0
C2	138	0	0	0	0	0
C3	532	0	0	0	0	0
iC4	1327	0	0	0	0	0
nC4	866	0	0	0	0	0
DEA	0	3809	3809	3809	3809	3809
LIGHT NAPHTHA	7923	0	0	0	0	0
HEAVY NAPHTHA	11904	0	0	0	0	0
KEROSENE	8306	0	0	0	0	0
DIESEL	4891	0	0	0	0	0
UCO	63	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	36100	19108	19108	19108	19108	19108
Total Molar Flow, kg-moles/hr	358	884	884	884	884	884
Tot Liq Std Flow, m³/h		18.8	18.8	18.8	18.8	18.8
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	244	245	246	247	248	249
From	11-P-104A/B	11-P-104A/B	11-V-112	11-V-112	11-V-112	11-V-112
To	11-C-101	11-C-101	AMINE ABSOR	AMINE ABSOR	AMINE REGEN	AMINE REGEN
Content	LEAN AMINE	LEAN AMINE	SOUR GAS	SOUR GAS	RICH AMINE	RICH AMINE
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	3	3	0	0
H2S	63	63	1	1	569	569
NH3	0	0	0	0	37	37
H2O	15591	15591	0	0	15513	15513
C1	0	0	1	1	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	3898	3898	0	0	3898	3898
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	19552	19552	5	5	20017	20017
Total Molar Flow, kg-moles/hr	904	904	1	1	917	917
Tot Liq Std Flow, m³/h	19.2	19.2			19.8	19.8
Total Vap. Std. Flow, Nm³/hr			22.4	22.4		
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	3	3	0	0
H2S	62	62	0	0	554	554
NH3	0	0	0	0	34	34
H2O	15237	15237	0	0	15161	15161
C1	0	0	1	1	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	3809	3809	0	0	3809	3809
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	19108	19108	4	4	19558	19558
Total Molar Flow, kg-moles/hr	884	884	1	1	895	895
Tot Liq Std Flow, m³/h	18.8	18.8			19.4	19.4
Total Vap. Std. Flow, Nm³/hr			22.4	22.4		

Material Balance reflects a 0.1% convergence of the process

COMPONENT SUMMARY
RECYCLE GAS SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	250	251	252	253	254
From	11-V-107	11-V-107	11-V-107	11-V-107	11-V-107
To	AMINE ABSOR	AMINE ABSOR	OFFPLOT	OFFPLOT	OFFPLOT
Content	SOUR GAS	SOUR GAS	SOUR WATER	SOUR WATER	SOUR WATER
START-OF-RUN					
COMPONENT, kg/hr					
H2	2	2	0	0	0
H2S	1	1	418	418	450
NH3	0	0	287	287	303
H2O	0	0	7553	7553	11678
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
DEA	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0
KEROSENE	0	0	0	0	0
DIESEL	0	0	0	0	0
UCO	0	0	0	0	0
FEED	0	0	0	0	0
Total Mass Flow, kg/hr	3	3	8258	8258	12431
Total Molar Flow, kg-moles/hr	1	1	448	448	679
Tot Liq Std Flow, m³/h			8.5	8.5	12.7
Total Vap. Std. Flow, Nm³/hr	22.4	22.4			

END-OF-RUN					
COMPONENT, kg/hr					
H2	2	2	0	0	0
H2S	1	1	426	426	460
NH3	0	0	290	290	308
H2O	0	0	7948	7948	11305
C1	1	1	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
DEA	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0
KEROSENE	0	0	0	0	0
DIESEL	0	0	0	0	0
UCO	0	0	0	0	0
FEED	0	0	0	0	0
Total Mass Flow, kg/hr	4	4	8664	8664	12073
Total Molar Flow, kg-moles/hr	1	1	471	471	659
Tot Liq Std Flow, m³/h			9.0	9.0	12.4
Total Vap. Std. Flow, Nm³/hr	22.4	22.4			

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	301	302	303	304	305	306
From	11-C-201	11-EA-201	11-E-201	11-V-201	11-V-201	11-V-201
To	11-EA-201	11-E-201	11-V-201	OFFPLOT	OFFPLOT	11-P-201A/B
Content	STRIP OVHD	STRIP OVHD	STRIP OVHD	OFFGAS	OFFGAS	UNSTAB NAPH
START-OF-RUN						
COMPONENT, kg/hr						
H2	73	73	73	70	70	3
H2S	125	125	125	28	28	66
NH3	17	17	17	0	0	0
H2O	4144	4144	4144	9	9	10
C1	100	100	100	74	74	26
C2	178	178	178	71	71	107
C3	1166	1166	1166	196	196	969
iC4	3230	3230	3230	241	241	2989
nC4	2111	2111	2111	118	118	1993
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	18438	18438	18438	176	176	18262
HEAVY NAPHTHA	10465	10465	10465	25	25	10439
KEROSENE	323	323	323	0	0	323
DIESEL	2	2	2	0	0	2
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	40372	40372	40372	1008	1008	35189
Total Molar Flow, kg-moles/hr	737	737	737	56	56	448
Tot Liq Std Flow, m³/h						53.0
Total Vap. Std. Flow, Nm³/hr	16519.1			1255.2	1255.2	

END-OF-RUN						
COMPONENT, kg/hr						
H2	72	72	72	68	68	3
H2S	141	141	141	33	33	74
NH3	18	18	18	0	0	0
H2O	3379	3379	3379	10	10	11
C1	144	144	144	108	108	37
C2	345	345	345	139	139	205
C3	1492	1492	1492	255	255	1237
iC4	4054	4054	4054	308	308	3745
nC4	2668	2668	2668	152	152	2515
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	21149	21149	21149	215	215	20933
HEAVY NAPHTHA	7823	7823	7823	21	21	7801
KEROSENE	145	145	145	0	0	145
DIESEL	1	1	1	0	0	1
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	41431	41431	41431	1309	1309	36707
Total Molar Flow, kg-moles/hr	742	742	742	64	64	488
Tot Liq Std Flow, m³/h						56.3
Total Vap. Std. Flow, Nm³/hr	16631.2			1434.5	1434.5	

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	307	308	309	310	311	312
From	11-P-201A/B	11-P-201A/B	11-P-201A/B	11-P-201A/B	11-P-201A/B	11-V-201
To	11-E-301	11-E-301	11-E-301	11-C-201	11-C-201	OFFPLOT
Content	UNSTAB NAPH	UNSTAB NAPH	UNSTAB NAPH	REFLUX	REFLUX	SOUR WATER
START-OF-RUN						
COMPONENT, kg/hr						
H2	3	1	1	2	2	0
H2S	66	29	29	36	36	32
NH3	0	0	0	0	0	16
H2O	10	5	5	5	5	4124
C1	26	11	11	15	15	0
C2	107	48	48	59	59	0
C3	969	431	431	538	538	0
iC4	2989	1329	1329	1659	1659	0
nC4	1993	887	887	1106	1106	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	18262	8126	8126	10137	10137	0
HEAVY NAPHTHA	10439	4645	4645	5795	5795	0
KEROSENE	323	144	144	179	179	0
DIESEL	2	1	1	1	1	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	35189	15657	15657	19532	19532	4172
Total Molar Flow, kg-moles/hr	448	200	200	250	250	231
Tot Liq Std Flow, m³/h	53.0	23.6	23.6	29.4	29.4	4.2
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	3	1	1	2	2	0
H2S	74	28	28	47	47	34
NH3	0	0	0	0	0	18
H2O	11	4	4	7	7	3358
C1	37	14	14	23	23	0
C2	205	76	76	129	129	0
C3	1237	460	460	777	777	0
iC4	3745	1393	1393	2353	2353	0
nC4	2515	935	935	1580	1580	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	20933	7785	7785	13149	13149	0
HEAVY NAPHTHA	7801	2901	2901	4900	4900	0
KEROSENE	145	54	54	91	91	0
DIESEL	1	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	36707	13651	13651	23058	23058	3410
Total Molar Flow, kg-moles/hr	488	181	181	306	306	188
Tot Liq Std Flow, m³/h	56.3	20.9	20.9	35.3	35.3	3.4
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	313	314	315	317	318	319
From	11-V-201		11-C-201	11-P-202A/B	11-E-203	11-E-105
To	OFFPLOT	11-C-201	11-P-202A/B	11-E-203	11-E-105	11-F-201
Content	SOUR WATER	HP STEAM	STRIPPER BTMS	STRIPPER BTM	FRAC FEED	FRAC FEED
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	32	0	0	0	0	0
NH3	16	0	0	0	0	0
H2O	4124	4830	704	704	704	704
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	1125	1125	1125	1125
HEAVY NAPHTHA	0	0	12858	12858	12858	12858
KEROSENE	0	0	21446	21446	21446	21446
DIESEL	0	0	68459	68459	68459	68459
UCO	0	0	88046	88046	88046	88046
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	4172	4830	192638	192638	192638	192638
Total Molar Flow, kg-moles/hr	231	268	799	799	799	799
Tot Liq Std Flow, m³/h			233.4	233.4	233.4	233.4
Total Vap. Std. Flow, Nm³/hr		6007.0				

END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	34	0	0	0	0	0
NH3	18	0	0	0	0	0
H2O	3358	4053	694	694	694	694
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	1	1	1	1
nC4	0	0	1	1	1	1
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	2090	2090	2090	2090
HEAVY NAPHTHA	0	0	15222	15222	15222	15222
KEROSENE	0	0	21402	21402	21402	21402
DIESEL	0	0	66597	66597	66597	66597
UCO	0	0	88337	88337	88337	88337
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	3410	4053	194344	194344	194344	194344
Total Molar Flow, kg-moles/hr	188	225	828	828	828	828
Tot Liq Std Flow, m³/h			235.4	235.4	235.4	235.4
Total Vap. Std. Flow, Nm³/hr		5043.2				

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	320	321	322	323	324	325
From	11-F-201	11-F-201	11-C-202	11-EA-202	11-EA-202	11-V-202
To	11-C-202	11-C-202	11-EA-202	11-V-202	11-V-202	11-P-203A/B
Content	FRAC FEED	FRAC FEED	FRAC OVHD	FRAC OVHD	FRAC OVHD	WHOLE NAPH
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	704	704	7318	7318	7318	26
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	2	2	2	2
nC4	0	0	3	3	3	3
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	1125	1125	6765	6765	6765	6765
HEAVY NAPHTHA	12858	12858	69354	69354	69354	69354
KEROSENE	21446	21446	7085	7085	7085	7085
DIESEL	68459	68459	0	0	0	0
UCO	88046	88046	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	192638	192638	90527	90527	90527	83235
Total Molar Flow, kg-moles/hr	799	799	1177	1177	1177	772
Tot Liq Std Flow, m³/h				118.2	118.2	110.9
Total Vap. Std. Flow, Nm³/hr			26381.3			

END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	694	694	7311	7311	7311	29
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	1	1	5	5	5	5
nC4	1	1	7	7	7	7
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	2090	2090	11005	11005	11005	11005
HEAVY NAPHTHA	15222	15222	73116	73116	73116	73116
KEROSENE	21402	21402	6780	6780	6780	6780
DIESEL	66597	66597	0	0	0	0
UCO	88337	88337	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	194344	194344	98224	98224	98224	90942
Total Molar Flow, kg-moles/hr	828	828	1265	1265	1265	861
Tot Liq Std Flow, m³/h				129.0	129.0	121.7
Total Vap. Std. Flow, Nm³/hr			28353.7			

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	325A	326	327	327A	329	330
From	11-P-203A/B	11-P-203A/B	11-P-205A/B	11-P-203A/B	11-P-203A/B	11-P-203A/B
To	11-E-306	11-E-306	11-E-306	11-E-306	11-C-202	11-C-202
Content	WHOLE NAPH	WHOLE NAPH	WHOLE NAPH	WHOLE NAPH	REFLUX	REFLUX
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	26	4	4	4	21	21
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	2	0	0	0	2	2
nC4	3	0	0	0	2	2
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	6765	1125	1125	1125	5640	5640
HEAVY NAPHTHA	69354	11532	11532	11532	57821	57821
KEROSENE	7085	1178	1178	1178	5907	5907
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	83235	13839	13839	13839	69393	69393
Total Molar Flow, kg-moles/hr	772	128	128	128	643	643
Tot Liq Std Flow, m³/h	110.9	18.4	18.4	18.4	92.5	92.5
Total Vap. Std. Flow, Nm³/hr						

END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	29	5	5	5	23	23
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	5	1	1	1	4	4
nC4	7	1	1	1	5	5
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	11005	2089	2089	2089	8916	8916
HEAVY NAPHTHA	73116	13880	13880	13880	59237	59237
KEROSENE	6780	1287	1287	1287	5493	5493
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	90942	17263	17263	17263	73678	73678
Total Molar Flow, kg-moles/hr	861	163	163	163	699	699
Tot Liq Std Flow, m³/h	121.7	23.1	23.1	23.1	98.6	98.6
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	332	333	334	335	336	337
From	11-V-202	11-P-204A/B	11-P-204A/B	11-C-202	11-C-202	11-C-202
To	11-P-204A/B	11-V-108	11-V-108	11-C-203	11-C-203	11-C-203
Content	WATER	WATER	WATER	KEROSENE	KEROSENE	KEROSENE
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	7292	7292	7292	87	20	20
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	161	37	37
HEAVY NAPHTHA	0	0	0	19805	4566	4566
KEROSENE	0	0	0	113679	26207	26207
DIESEL	0	0	0	9920	2287	2287
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	7292	7292	7292	143652	33117	33117
Total Molar Flow, kg-moles/hr	405	405	405	1003	231	231
Tot Liq Std Flow, m³/h	7.3	7.3	7.3	183.2	42.2	42.2
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	7282	7282	7282	83	19	19
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	282	64	64
HEAVY NAPHTHA	0	0	0	20252	4623	4623
KEROSENE	0	0	0	113238	25846	25846
DIESEL	0	0	0	9790	2234	2234
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	7282	7282	7282	143645	32786	32786
Total Molar Flow, kg-moles/hr	404	404	404	1006	229	229
Tot Liq Std Flow, m³/h	7.3	7.3	7.3	182.8	41.7	41.7
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	338	339	340	340A	341	341A
From	11-C-203	11-C-202	11-P-207A/B	11-P-207A-B	11-E-110	11-E-101
To	11-C-202	11-P-207A/B	11-E-101	11-E-101	11-C-202	11-E-110
Content	STRIP OVHD	KERO PA	KERO PA	KERO PA	KERO PA	KERO PA
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	20	67	67	67	67	67
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	37	124	124	124	124	124
HEAVY NAPHTHA	3246	15239	15239	15239	15239	15239
KEROSENE	8010	87472	87472	87472	87472	87472
DIESEL	210	7633	7633	7633	7633	7633
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	11523	110535	110535	110535	110535	110535
Total Molar Flow, kg-moles/hr	87	770	770	770	770	770
Tot Liq Std Flow, m³/h		140.9	140.9	140.9	140.9	140.9
Total Vap. Std. Flow, Nm³/hr	1950.0					
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	19	64	64	64	64	64
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	64	218	218	218	218	218
HEAVY NAPHTHA	3286	15629	15629	15629	15629	15629
KEROSENE	7756	87392	87392	87392	87392	87392
DIESEL	203	7556	7556	7556	7556	7556
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	11328	110859	110859	110859	110859	110859
Total Molar Flow, kg-moles/hr	86	776	776	776	776	776
Tot Liq Std Flow, m³/h		141.1	141.1	141.1	141.1	141.1
Total Vap. Std. Flow, Nm³/hr	1927.6					

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	341B	342	343	344	345	346
From	11-E-101	11-E-110	11-C-203	11-E-202	11-C-203	11-P-206A/B
To	11-E-110	11-C-202	11-E-202	11-C-203	11-P-206A/B	11-E-109
Content	KERO PA	KERO PA	KEROSENE	KEROSENE	KEROSENE	KEROSENE
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	67	67	0	0	0	0
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	124	124	1	1	0	0
HEAVY NAPHTHA	15239	15239	5036	5036	1319	1319
KEROSENE	87472	87472	52436	52436	18197	18197
DIESEL	7633	7633	4933	4933	2077	2077
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	110535	110535	62406	62406	21593	21593
Total Molar Flow, kg-moles/hr	770	770	424	424	144	144
Tot Liq Std Flow, m³/h	140.9	140.9	79.3		27.4	27.4
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	64	64	0	0	0	0
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	218	218	2	2	0	0
HEAVY NAPHTHA	15629	15629	5054	5054	1336	1336
KEROSENE	87392	87392	51509	51509	18090	18090
DIESEL	7556	7556	4772	4772	2032	2032
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	110859	110859	61337	61337	21458	21458
Total Molar Flow, kg-moles/hr	776	776	417	417	144	144
Tot Liq Std Flow, m³/h	141.1	141.1	77.8		27.2	27.2
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	347	348	349	350	351	352
From	11-E-109	11-EA-203	11-E-204	11-E-204	11-C-202	11-C-202
To	11-EA-203	11-E-204	OFFPLOT	OFFPLOT	11-C-204	11-C-204
Content	KEROSENE	KEROSENE	KEROSENE	KEROSENE	DIESEL	DIESEL
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	0	66	36
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	82	44
HEAVY NAPHTHA	1319	1319	1319	1319	1832	995
KEROSENE	18197	18197	18197	18197	17210	9351
DIESEL	2077	2077	2077	2077	145346	78968
UCO	0	0	0	0	17808	9676
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	21593	21593	21593	21593	182345	99070
Total Molar Flow, kg-moles/hr	144	144	144	144	813	442
Tot Liq Std Flow, m³/h	27.4	27.4	27.4	27.4	222.9	121.0
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	0	65	34
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	147	77
HEAVY NAPHTHA	1336	1336	1336	1336	2088	1087
KEROSENE	18090	18090	18090	18090	17362	9037
DIESEL	2032	2032	2032	2032	147463	76759
UCO	0	0	0	0	17763	9246
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	21458	21458	21458	21458	184888	96240
Total Molar Flow, kg-moles/hr	144	144	144	144	829	432
Tot Liq Std Flow, m³/h	27.2	27.2	27.2	27.2	225.2	117.2
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	353	354	355	356	357	358
From	11-C-202	11-C-204	11-C-202	11-P-209A/B	11-P-209A/B	11-E-203
To	11-C-204	11-C-202	11-P-209A/B	11-E-203	11-E-203	11-C-202
Content	DIESEL	STRIP OVHD	DIESEL PA	DIESEL PA	DIESEL PA	DIESEL PA
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	36	2248	31	31	31	31
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	44	44	38	38	38	38
HEAVY NAPHTHA	995	989	836	836	836	836
KEROSENE	9351	7282	7859	7859	7859	7859
DIESEL	78968	22045	66371	66371	66371	66371
UCO	9676	213	8133	8133	8133	8133
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	99070	32821	83266	83266	83266	83266
Total Molar Flow, kg-moles/hr	442	287	371	371	371	371
Tot Liq Std Flow, m³/h	121.0		101.7	101.7	101.7	101.7
Total Vap. Std. Flow, Nm³/hr		6432.8				
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	34	2248	31	31	31	31
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	77	77	71	71	71	71
HEAVY NAPHTHA	1087	1080	1001	1001	1001	1001
KEROSENE	9037	7016	8325	8325	8325	8325
DIESEL	76759	21234	70704	70704	70704	70704
UCO	9246	203	8517	8517	8517	8517
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	96240	31858	88649	88649	88649	88649
Total Molar Flow, kg-moles/hr	432	283	397	397	397	397
Tot Liq Std Flow, m³/h	117.2		108.0	108.0	108.0	108.0
Total Vap. Std. Flow, Nm³/hr		6343.2				

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	361	362	363	363A	364	366
From	11-E-203	11-C-204	11-P-208A-B	11-P-208A-B	11-E-102A-B	11-E-301
To	11-C-202	11-P-208A/B	11-E-102A-B	11-E-102A-B	11-E-301	DIESEL DRYER
Content	DIESEL PA	DIESEL	DIESEL	DIESEL	DIESEL	DIESEL
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	31	79	79	79	79	79
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	38	0	0	0	0	0
HEAVY NAPHTHA	836	6	6	6	6	6
KEROSENE	7859	2068	2068	2068	2068	2068
DIESEL	66371	56923	56923	56923	56923	56923
UCO	8133	9463	9463	9463	9463	9463
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	83266	68539	68539	68539	68539	68539
Total Molar Flow, kg-moles/hr	371	281	281	281	281	281
Tot Liq Std Flow, m³/h	101.7	83.0	83.0	83.0	83.0	83.0
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	31	77	77	77	77	77
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	71	0	0	0	0	0
HEAVY NAPHTHA	1001	6	6	6	6	6
KEROSENE	8325	2021	2021	2021	2021	2021
DIESEL	70704	55525	55525	55525	55525	55525
UCO	8517	9043	9043	9043	9043	9043
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	88649	66672	66672	66672	66672	66672
Total Molar Flow, kg-moles/hr	397	274	274	274	274	274
Tot Liq Std Flow, m³/h	108.0	80.5	80.5	80.5	80.5	80.5
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	367	368	369	370	371	372
From	DIESEL DRYER	VAC DRYER	LP STEAM	LP STEAM	11-C-202	11-P-210A/B
To	OFFPLOT	OFFPLOT	11-C-204	11-C-202	11-P-210A/B	11-E-202
Content	DIESEL	DIESEL	LP STEAM	LP STEAM	FRAC BTMS	FRAC BTMS
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	2291	4459	78	78
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	6	6	0	0	0	0
KEROSENE	2068	2068	0	0	3	3
DIESEL	56923	56923	0	0	9460	9460
UCO	9463	9463	0	0	78583	78583
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	68460	68460	2291	4459	88124	88124
Total Molar Flow, kg-moles/hr	276	276	127	248	216	216
Tot Liq Std Flow, m³/h	82.9	82.9			104.0	104.0
Total Vap. Std. Flow, Nm³/hr			2846.6	5558.7		

END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	2291	4459	79	79
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	6	6	0	0	0	0
KEROSENE	2021	2021	0	0	3	3
DIESEL	55525	55525	0	0	9040	9040
UCO	9043	9043	0	0	79294	79294
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	66595	66595	2291	4459	88416	88416
Total Molar Flow, kg-moles/hr	270	270	127	248	216	216
Tot Liq Std Flow, m³/h	80.4	80.4			104.0	104.0
Total Vap. Std. Flow, Nm³/hr			2846.6	5558.7		

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	373	374	375	376	377	378
From	11-P-210A/B	11-E-202	11-E-202	11-E-303	11-E-303	11-E-305
To	11-E-202	11-E-303	11-E-303	11-E-305	11-E-305	11-V-102
Content	FRAC BTMS	FRAC BTMS	FRAC BTMS	FRAC BTMS	FRAC BTMS	FRAC BTMS
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	78	78	78	78	78	78
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	3	3	3	3	3	3
DIESEL	9460	9460	9460	9460	9460	9460
UCO	78583	78583	78583	78583	78583	78583
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	88124	88124	88124	88124	88124	88124
Total Molar Flow, kg-moles/hr	216	216	216	216	216	216
Tot Liq Std Flow, m³/h	104.0	104.0	104.0	104.0	104.0	104.0
Total Vap. Std. Flow, Nm³/hr						

END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	79	79	79	79	79	79
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	3	3	3	3	3	3
DIESEL	9040	9040	9040	9040	9040	9040
UCO	79294	79294	79294	79294	79294	79294
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	88416	88416	88416	88416	88416	88416
Total Molar Flow, kg-moles/hr	216	216	216	216	216	216
Tot Liq Std Flow, m³/h	104.0	104.0	104.0	104.0	104.0	104.0
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
FRACTIONATION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	380	381	382	383
From	11-E-305	11-E-305	11-EA-204	11-EA-204
To	11-V-102	11-EA-204	OFFPLOT	OFFPLOT
Content	2ND STG FEED	FRAC BTMS	FRAC BTMS	FRAC BTMS
START-OF-RUN				
COMPONENT, kg/hr				
H2	0	0	0	0
H2S	0	0	0	0
NH3	0	0	0	0
H2O	76	2	2	2
C1	0	0	0	0
C2	0	0	0	0
C3	0	0	0	0
iC4	0	0	0	0
nC4	0	0	0	0
DEA	0	0	0	0
LIGHT NAPHTHA	0	0	0	0
HEAVY NAPHTHA	0	0	0	0
KEROSENE	3	0	0	0
DIESEL	9198	261	261	261
UCO	76412	2171	2171	2171
FEED	0	0	0	0
Total Mass Flow, kg/hr	85689	2434	2434	2434
Total Molar Flow, kg-moles/hr	209	6	6	6
Tot Liq Std Flow, m³/h	101.1	2.9	2.9	2.9
Total Vap. Std. Flow, Nm³/hr				
END-OF-RUN				
COMPONENT, kg/hr				
H2	0	0	0	0
H2S	0	0	0	0
NH3	0	0	0	0
H2O	77	2	2	2
C1	0	0	0	0
C2	0	0	0	0
C3	0	0	0	0
iC4	0	0	0	0
nC4	0	0	0	0
DEA	0	0	0	0
LIGHT NAPHTHA	0	0	0	0
HEAVY NAPHTHA	0	0	0	0
KEROSENE	3	0	0	0
DIESEL	8790	250	250	250
UCO	77099	2195	2195	2195
FEED	0	0	0	0
Total Mass Flow, kg/hr	85969	2447	2447	2447
Total Molar Flow, kg-moles/hr	209	6	6	6
Tot Liq Std Flow, m³/h	101.2	2.9	2.9	2.9
Total Vap. Std. Flow, Nm³/hr				

Material Balance reflects a 0.1% convergence of the process

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COMPONENT SUMMARY
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	403	404	405	406	407	408
From	11-E-301	11-C-301	11-E-302	11-V-301	11-V-301	11-V-301
To	11-C-301	11-E-302	11-V-301	AMINE ABSOR	AMINE ABSOR	11-P-303A/B
Content	NAPHTHA	STAB OVHD	STAB OVHD	OFFGAS	OFFGAS	LPG
START-OF-RUN						
COMPONENT, kg/hr						
H2	1	2	2	1	1	1
H2S	29	133	133	4	4	129
NH3	0	0	0	0	0	0
H2O	5	10	10	0	0	6
C1	11	39	39	5	5	34
C2	48	212	212	7	7	206
C3	431	2084	2084	21	21	2063
iC4	1329	6569	6569	28	28	6541
nC4	887	4395	4395	14	14	4381
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	8126	146	146	0	0	146
HEAVY NAPHTHA	4645	0	0	0	0	0
KEROSENE	144	0	0	0	0	0
DIESEL	1	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	15657	13590	13590	80	80	13507
Total Molar Flow, kg-moles/hr	200	254	254			251
Tot Liq Std Flow, m³/h	23.6					24.3
Total Vap. Std. Flow, Nm³/hr		5693.2				

END-OF-RUN						
COMPONENT, kg/hr						
H2	1	2	2	1	1	1
H2S	28	115	115	3	3	112
NH3	0	0	0	0	0	0
H2O	4	9	9	0	0	6
C1	14	43	43	6	6	38
C2	76	314	314	10	10	304
C3	460	2036	2036	22	22	2014
iC4	1393	6296	6296	28	28	6268
nC4	935	4240	4240	14	14	4226
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	7785	153	153	0	0	153
HEAVY NAPHTHA	2901	0	0	0	0	0
KEROSENE	54	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	13651	13208	13208	84	84	13122
Total Molar Flow, kg-moles/hr	181	248	248			245
Tot Liq Std Flow, m³/h	20.9					23.7
Total Vap. Std. Flow, Nm³/hr		5558.7				

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	409	410	411	412	413	414
From	11-P-303A/B	11-P-303A/B	11-P-303A/B	11-P-303A/B	11-P-303A/B	11-C-301
To	OFFPLOT	11-C-301	11-C-301	OFFPLOT	OFFPLOT	11-E-303
Content	LPG	REFLUX	REFLUX	LPG	LPG	NAPHTHA
START-OF-RUN						
COMPONENT, kg/hr						
H2	1	1	1	0	0	0
H2S	129	103	103	26	26	0
NH3	0	0	0	0	0	0
H2O	6	5	5	1	1	0
C1	34	27	27	7	7	0
C2	206	165	165	41	41	0
C3	2063	1652	1652	410	410	2
iC4	6541	5239	5239	1302	1302	313
nC4	4381	3509	3509	872	872	707
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	146	117	117	29	29	60420
HEAVY NAPHTHA	0	0	0	0	0	28056
KEROSENE	0	0	0	0	0	754
DIESEL	0	0	0	0	0	5
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	13507	10818	10818	2688	2688	90257
Total Molar Flow, kg-moles/hr	251	200	200	48	48	1057
Tot Liq Std Flow, m³/h	24.3	19.4	19.4	4.8	4.8	131.1
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	1	1	1	0	0	0
H2S	112	87	87	24	24	0
NH3	0	0	0	0	0	0
H2O	6	5	5	1	1	0
C1	38	30	30	8	8	0
C2	304	238	238	66	66	0
C3	2014	1576	1576	439	439	2
iC4	6268	4903	4903	1365	1365	329
nC4	4226	3305	3305	920	920	776
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	153	120	120	33	33	60910
HEAVY NAPHTHA	0	0	0	0	0	18670
KEROSENE	0	0	0	0	0	303
DIESEL	0	0	0	0	0	2
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	13122	10265	10265	2856	2856	80992
Total Molar Flow, kg-moles/hr	245	193	193	52	52	973
Tot Liq Std Flow, m³/h	23.7	18.5	18.5	5.2	5.2	118.8
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	415	416	417	418	420	421
From	11-E-303	11-C-301	11-C-301	11-E-306	11-C-302	11-EA-301
To	11-C-301	11-C-302	11-C-302	11-C-302	11-EA-301	11-V-302
Content	NAPHTHA	NAPHTHA	NAPHTHA	NAPHTHA	SPLITTER OVHD	SPLITTER OVHD
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	4	13	13
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	2	0	0	0	0	0
iC4	313	26	26	0	77	77
nC4	707	62	62	0	183	183
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	60420	8096	8096	1125	25528	25528
HEAVY NAPHTHA	28056	4645	4645	11532	1337	1337
KEROSENE	754	144	144	1178	0	0
DIESEL	5	1	1	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	90257	12974	12974	13839	27138	27138
Total Molar Flow, kg-moles/hr	1057	148	148	128	336	336
Tot Liq Std Flow, m³/h		18.7		18.4		40.6
Total Vap. Std. Flow, Nm³/hr					7531.1	
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	5	13	13
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	2	0	0	0	0	0
iC4	329	26	26	1	69	69
nC4	776	65	65	1	171	171
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	60910	7752	7752	2089	23837	23837
HEAVY NAPHTHA	18670	2901	2901	13880	1340	1340
KEROSENE	303	54	54	1287	0	0
DIESEL	2	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	80992	10798	10798	17263	25430	25430
Total Molar Flow, kg-moles/hr	973	127	127	163	315	315
Tot Liq Std Flow, m³/h		15.7		23.1		38.0
Total Vap. Std. Flow, Nm³/hr					7060.4	

Material Balance reflects a 0.1% convergence of the process

COMPONENT SUMMARY
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	422	423	424	425	426	427
From	11-EA-301	11-V-302	11-P-301A/B	11-P-301A/B	11-P-301A/B	11-P-301A/B
To	11-V-302	11-P-301A/B	11-C-302	11-C-302	11-C-302	11-E-304
Content	SPLITTER OVHD	LT NAPHTHA	LT NAPHTHA	REFLUX	REFLUX	LT NAPHTHA
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	13	13	13	8	8	4
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	77	77	77	50	50	26
nC4	183	183	183	121	121	63
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	25528	25528	25528	16829	16829	8700
HEAVY NAPHTHA	1337	1337	1337	881	881	455
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	27138	27138	27138	17889	17889	9248
Total Molar Flow, kg-moles/hr	336	336	336	221	221	114
Tot Liq Std Flow, m³/h	40.6	40.6	40.6	26.7	26.7	13.8
Total Vap. Std. Flow, Nm³/hr						
END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	13	12	12	7	7	5
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	69	69	69	43	43	27
nC4	171	171	171	105	105	67
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	23837	23837	23837	14578	14578	9259
HEAVY NAPHTHA	1340	1340	1340	820	820	521
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	25430	25429	25429	15553	15553	9879
Total Molar Flow, kg-moles/hr	316	314	314	193	193	121
Tot Liq Std Flow, m³/h	38.0	38.0	38.0	23.2	23.2	14.7
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	428	429	430	431	432	433
From	11-E-304	11-E-304	1-C-302	11-E-305	11-C-302	11-P-302A/B
To	GASO BLEND	GASO BLEND	11-E-305	11-C-302	11-P-302A/B	11-E-306
Content	LT NAPHTHA	LT NAPHTHA	HVY NAPHTHA	HVY NAPHTHA	HVY NAPHTHA	HVY NAPHTHA
START-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	4	4	0	0	0	0
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	26	26	0	0	0	0
nC4	63	63	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	8700	8700	4630	4630	521	521
HEAVY NAPHTHA	455	455	103707	103707	15721	15721
KEROSENE	0	0	7040	7040	1322	1322
DIESEL	0	0	5	5	1	1
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	9248	9248	115382	115382	17565	17565
Total Molar Flow, kg-moles/hr	114	114	1088	1088	163	163
Tot Liq Std Flow, m³/h	13.8	13.8	153.7		23.3	23.3
Total Vap. Std. Flow, Nm³/hr						

END-OF-RUN						
COMPONENT, kg/hr						
H2	0	0	0	0	0	0
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	5	5	0	0	0	0
C1	0	0	0	0	0	0
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	27	27	0	0	0	0
nC4	67	67	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	9259	9259	5009	5009	583	583
HEAVY NAPHTHA	521	521	103164	103164	16260	16260
KEROSENE	0	0	6884	6884	1341	1341
DIESEL	0	0	2	2	0	0
UCO	0	0	0	0	0	0
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	9879	9879	115059	115059	18184	18184
Total Molar Flow, kg moles/hr	121	121	1087	1087	169	169
Tot Liq Std Flow, m³/h	14.7	14.7	153.0		24.1	24.1
Total Vap. Std. Flow, Nm³/hr						

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
LIGHT ENDS RECOVERY SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	434	435	436	437
From	11-E-306	11-EA-302	11-EA-302	11-EA-302
To	11-EA-302	11-E-307	RUNDOWN	RUNDOWN
Content	HVY NAPHTHA	HVY NAPHTHA	HVY NAPHTHA	HVY NAPHTHA
START-OF-RUN				
COMPONENT, kg/hr				
H2	0	0	0	0
H2S	0	0	0	0
NH3	0	0	0	0
H2O	0	0	0	0
C1	0	0	0	0
C2	0	0	0	0
C3	0	0	0	0
iC4	0	0	0	0
nC4	0	0	0	0
DEA	0	0	0	0
LIGHT NAPHTHA	521	521	521	521
HEAVY NAPHTHA	15721	15721	15721	15721
KEROSENE	1322	1322	1322	1322
DIESEL	1	1	1	1
UCO	0	0	0	0
FEED	0	0	0	0
Total Mass Flow, kg/hr	17565	17565	17565	17565
Total Molar Flow, kg-moles/hr	163	163	163	163
Tot Liq Std Flow, m³/h	23.3	23.3	23.3	23.3
Total Vap. Std. Flow, Nm³/hr				
END-OF-RUN				
COMPONENT, kg/hr				
H2	0	0	0	0
H2S	0	0	0	0
NH3	0	0	0	0
H2O	0	0	0	0
C1	0	0	0	0
C2	0	0	0	0
C3	0	0	0	0
iC4	0	0	0	0
nC4	0	0	0	0
DEA	0	0	0	0
LIGHT NAPHTHA	583	583	583	583
HEAVY NAPHTHA	16260	16260	16260	16260
KEROSENE	1341	1341	1341	1341
DIESEL	0	0	0	0
UCO	0	0	0	0
FEED	0	0	0	0
Total Mass Flow, kg/hr	18184	18184	18184	18184
Total Molar Flow, kg-moles/hr	169	169	169	169
Tot Liq Std Flow, m³/h	24.1	24.1	24.1	24.1
Total Vap. Std. Flow, Nm³/hr				

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
MAKE-UP COMPRESSION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	501	502	503	504	505	506
From	H2 GENERATION	H2 GENERATION	11-V-401	11-V-401	11-K-401B 1ST	11-EA-401B
To	11-V-401	11-V-401	11-K-401B	11-K-401B 1ST	11-EA401B	11-V-402B
Content	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN
START-OF-RUN						
COMPONENT, kg/hr						
H2	3592	4131	4131	4131	4131	4131
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	0	0	0
C1	144	165	165	165	165	165
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO						
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	3736	4296	4296	4296	4296	4296
Total Molar Flow, kg-moles/hr	1791	2059	2059	2059	2059	2059
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr	40143.5	46150.4	46150.4	46150.4	46150.4	46150.4
END-OF-RUN						
COMPONENT, kg/hr						
H2	3517	4044	4044	4044	4044	4044
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	0	0	0
C1	141	162	162	162	162	162
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO						
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	3658	4206	4206	4206	4206	4206
Total Molar Flow, kg-moles/hr	1754	2016	2016	2016	2016	2016
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr	39314.2	45186.6	45186.6	45186.6	45186.6	45186.6

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
MAKE-UP COMPRESSION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	507	508	509	510	511	512
From	11-V-402B	11-K-401B 2ND	11-EA-402B	11-V-403B	11-K-401B 3RD	11-K-401B 3RD
To	11-K-401B 2ND	11-EA-402B	11-V-403B	11-K-401B 3RD	11-E-107	11-E-107
Content	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN
START-OF-RUN						
COMPONENT, kg/hr						
H2	4131	4131	4131	4131	4131	4131
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	0	0	0
C1	165	165	165	165	165	165
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO						
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	4296	4296	4296	4296	4296	4296
Total Molar Flow, kg-moles/hr	2059	2059	2059	2059	2059	2059
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr	46150.4	46150.4	46150.4	46150.4	46150.4	46150.4
END-OF-RUN						
COMPONENT, kg/hr						
H2	4044	4044	4044	4044	4044	4044
H2S	0	0	0	0	0	0
NH3	0	0	0	0	0	0
H2O	0	0	0	0	0	0
C1	162	162	162	162	162	162
C2	0	0	0	0	0	0
C3	0	0	0	0	0	0
iC4	0	0	0	0	0	0
nC4	0	0	0	0	0	0
DEA	0	0	0	0	0	0
LIGHT NAPHTHA	0	0	0	0	0	0
HEAVY NAPHTHA	0	0	0	0	0	0
KEROSENE	0	0	0	0	0	0
DIESEL	0	0	0	0	0	0
UCO						
FEED	0	0	0	0	0	0
Total Mass Flow, kg/hr	4206	4206	4206	4206	4206	4206
Total Molar Flow, kg-moles/hr	2016	2016	2016	2016	2016	2016
Tot Liq Std Flow, m³/h						
Total Vap. Std. Flow, Nm³/hr	45186.6	45186.6	45186.6	45186.6	45186.6	45186.6

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0

COMPONENT SUMMARY
MAKE-UP COMPRESSION SECTION

TAMOIL CREMONA REFINERY
HYDROCRACKER PROJECT

PRELIMINARY
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Stream No	513	514	515	516
From	11-K-401B 3RD	11-K-401B 3RD	11-K-401B 3RD	11-EA-403
To	11-E-107	11-EA-403	11-EA-403	11-V-401
Content	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN	MU HYDROGEN
START-OF-RUN				
COMPONENT, kg/hr				
H2	3592	539	539	539
H2S	0	0	0	0
NH3	0	0	0	0
H2O	0	0	0	0
C1	144	22	22	22
C2	0	0	0	0
C3	0	0	0	0
iC4	0	0	0	0
nC4	0	0	0	0
DEA	0	0	0	0
LIGHT NAPHTHA	0	0	0	0
HEAVY NAPHTHA	0	0	0	0
KEROSENE	0	0	0	0
DIESEL	0	0	0	0
UCO				
FEED	0	0	0	0
Total Mass Flow, kg/hr	3736	561	561	561
Total Molar Flow, kg-moles/hr	1791	268	268	268
Tot Liq Std Flow, m³/h				
Total Vap. Std. Flow, Nm³/hr	40143.5	6007.0	6007.0	6007.0

END-OF-RUN				
COMPONENT, kg/hr				
H2	3517	528	528	528
H2S	0	0	0	0
NH3	0	0	0	0
H2O	0	0	0	0
C1	141	21	21	21
C2	0	0	0	0
C3	0	0	0	0
iC4	0	0	0	0
nC4	0	0	0	0
DEA	0	0	0	0
LIGHT NAPHTHA	0	0	0	0
HEAVY NAPHTHA	0	0	0	0
KEROSENE	0	0	0	0
DIESEL	0	0	0	0
UCO				
FEED	0	0	0	0
Total Mass Flow, kg/hr	3658	549	549	549
Total Molar Flow, kg-moles/hr	1754	263	263	263
Tot Liq Std Flow, m³/h				
Total Vap. Std. Flow, Nm³/hr	39314.2	5894.9	5894.9	5894.9

Material Balance reflects a 0.1% convergence of the process

Eng:	Chkd:	Aprvd:	Date: 08/22/2007	Rev: 0